CAREER AND TECHNICAL EDUCATION

Operational Guide

for

Occupational and Support Programs

TECHNICAL AND PROFESSIONAL EDUCATION

July 1, 2005

Summary of Changes in Operational Guide

February 14, 2005	April 1, 2005
Updated: • **Course Codes** • **Equipment Lists**	**Added:** • **Pathway - Program of Study Crosswalk** • **Technology Standards for 2006-07** **Rearranged:** • **Technology Standards for Career Guidance Areas**

July 1, 2005
Corrections:

• **Course Codes**	• **Pathway Name**

Changes (4/1/05)

Course Codes:

Incomplete sentences in numerous course code descriptions are completed.

Changes (7/1/05)

Technical and Professional Education:

Health Informatics pathway deleted.

Building Trades changed to Construction Technology in the course codes.

Geographic Info Systems changed to Geospatial Technology.

Drafting and Design – Engineering CAD added to Architecture and Construction cluster.

Geospatial Technology moved from Science, Technology, Engineering, and Math cluster to Architecture and Construction cluster.

Auto Body changed to Automotive Collision Repair in the course codes.

Small Engines changes to Power Equipment Technology in the course codes.

Licensure requirement for DWE-Approved Career and Tech Ed., DWE-Approved Technical and Professional Course, and DWE Approved Technical and Professional Lab changed from ANY to Any Technical & Professional Permit.

Design/Pre-construction Pathway added to Architecture and Construction cluster.

Pathways rearranged through clusters.

Statement of Assurance

All vocational opportunities are offered without regard to race, color, national origin, sex, handicap, or age. The following civil rights laws protect individuals from discrimination in programs or activities receiving federal financial assistance:

> Title IV of the Civil Rights Act of 1964
> Title IX of the Education Amendments of 1972
> Section 504 of the Rehabilitation Act of 1973
> Age Discrimination Act of 1975

RELATED LINK: Go to the Department of Labor for assistance with specific laws and regulations, http://www.dol.gov/dol/compliance/compliance-majorlaw.htm.

Summary of Dates/Forms Associated with Instructional Programs		
Date	**Form # and Web Site Address**	**Name of Form**
September 3	**(http://dwe.arkansas.gov/CareerandTechEducation/TeacherInformationSystem.htm)**	Computer submission of **Teacher Information**
October 1		Notification by letter of schools using concurrent credit to meet standards
October 1	**WE-92 (http://dwe.arkansas.gov/CTESCTENewandExpandedPrograms.htm)**	C & T New Program Start-up Proposals
March 15	**WE-4 (http://dwe.arkansas.gov/CTESCTENewandExpandedPrograms.htm)**	Reimbursement for C & T New Program Equipment
2 weeks prior to beginning of class	**WE-6 (http://dwe.arkansas.gov/CTESCTEReporting%20Forms.htm)**	Application for Adult Skill Training Class (no classes will be approved after May 1)
No later than 2 weeks after completion of class	**WE-PD (http://dwe.arkansas.gov/CTESCTEReporting%20Forms.htm)**	Adult Skill Training Class Enrollment Report (all reimbursement requests must be received by May 30)

ARKANSAS DEPARTMENT OF WORKFORCE EDUCATION
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Little Rock, AR 72201
Web Site Address: http://dwe.arkansas.gov

CAREER AND TECHNICAL EDUCATION

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Accountability and Funding
(http://dwe.arkansas.gov/CTESCTEPerkinsInfo.htm)
Room 407   (501) 682-1528
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Mary Ellen Koettel, Program Analyst
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  Perkins and related federally funded programs
  Career and technical education coordinators

Occupational Programs:

Office of Technical and Professional Education
(http://dwe.arkansas.gov/Tech&ProEd.htm)
Room 505   (501) 682-1271
Fax: (501) 682-1355
  Cluster Responsibility: Architecture & Construction;
  Government & Public Administration; Health Sciences;
  Law, Public Safety, & Security; Manufacturing; Science,
  Technology, Engineering, & Mathematics; Transportation,
  Distribution, & Logistics
(http://dwe.arkansas.gov/HOSA/index.html);
(http://dwe.arkansas.gov/skills.htm);
Dick Burchett, Program Manager
E-mail: dick.burchett@arkansas.gov

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Specific Career and Technical Education Program Operational Procedures

> *Occupational Programs* (with minimum equipment lists)*:*

> **Cluster Responsibility: Architecture & Construction; Government & Public
> Administration; Law, Public Safety, & Security; Manufacturing;
> Science, Technology, Engineering, & Mathematics; Transportation, Distribution, &
> Logistics; Health Science**

PROGRAM APPROVAL PROCESS

If a program was **conditionally approved** during the previous year and one of the following actions apply the following year, then the district will receive the program status indicated.

ACTION	STATUS TO RECEIVE
Problems are corrected	**FULL APPROVAL**
Problems not corrected	Disapproval
Critical elements from previous year received, and improvement plan not submitted	Disapproval

If a program had **full approval** during the previous year and one of the following actions apply the following year, then the district will receive the program status indicated.

ACTION	STATUS TO RECEIVE
No CTSO previous year	Conditional Approval
No program of study	Conditional Approval
No required foundations (reviewed by appropriate program area)	Conditional Approval
Core not offered every year	Conditional Approval
Meets all DWE standards	**FULL APPROVAL**

Program approval items reviewed during technical assistance visits and as information is available:

1. All report card items

    A. Completers
    B. Career and technical assessment
    C. Academic attainment
    D. Placement
    E. Nontraditional numbers

2. Advisory councils and meeting minutes

3. Safety issues

4. Any item noted as lacking in technical assistance visit

CAREER CLUSTER PATHWAY – PROGRAM OF STUDY CROSSWALK	
2004-05 Program of Study Name	**2005-06 Pathway – Program of Study Name**

Technical & Professional Education

Cluster: ARCHITECTURE & CONSTRUCTION

Construction Technology	Construction - Construction Technology
HVACR	Construction - HVACR
Drafting and Design	Design/Pre Construction – Drafting & Design Architectural CAD
Geographic Information Systems	Design/Pre Construction – Geospatial Technology

Cluster: GOVERNMENT & PUBLIC ADMINISTRATION

JROTC	National Security - JROTC

Cluster: HEALTH SCIENCES

Medical Professions Education	Therapeutic Services – Medical Professions Ed

Cluster: LAW, PUBLIC SAFETY, CORRECTIONS & SECURITY

Criminal Justice	Law Enforcement Services - Criminal Justice

Cluster: MANUFACTURING

Industrial Equipment Maintenance	Maintenance, Installation, & Repair - Industrial Equip Maintenance
Major Appliance Repair	Maintenance, Installation, & Repair - Major Appliance Tech
Furniture Manufacturing	Production – Furniture Manufacturing
Machine Tool Technology	Production - Machine Tool
Welding	Production - Welding

Cluster: SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS

Drafting & Design	Engineering & Technology - Drafting & Design Engineering CAD
Computer Engineering	Engineering & Technology - Computer Engineering
Electronics	Engineering & Technology - Electronics
Pre-engineering	Engineering & Technology - Pre-engineering

Cluster: TRANSPORTATION, DISTRIBUTION, & LOGISTICS

Automotive Collision	Facility & Mobile Equipment Maintenance - Auto Collision
Automotive Service Technology	Facility & Mobile Equipment Maintenance - Auto Service Tech
Aviation Mechanics	Facility & Mobile Equipment Maintenance - Aviation
Diesel Mechanics	Facility & Mobile Equipment Maintenance - Diesel Mechanics
Power Equipment Technology	Facility & Mobile Equipment Maintenance - Power Equipment Tech.

2005-06 Career and Technical Course Codes

CLUSTER: ARCHITECTURE & CONSTRUCTION

Construction Technology

494450   Bricklaying
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills in the laying and/or setting of brick, concrete block, hard tile, marble, and related materials, using trowels, levels, hammers, chisels, and other hand tools.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

494460   Carpentry
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to lay out, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

494470   Concrete Masonry
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills in placing and finishing concrete.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

494480   Construction Fundamentals
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills in the building, inspecting, and maintaining of structures and related properties.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

494490   Drywall
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills in installing and finishing drywall.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

494500   Electrical
494500   Electrical
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to install and repair residential electrical systems.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

494510   Plumbing
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to lay out, assemble, install, and maintain piping fixtures and piping systems, hot water, heating, cooling, and drainage systems.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 570   Construction Technology

Drafting & Design

494700   Drafting & Design
Credit: 1   Grade Levels: 9-12
Drafting & Design focuses on the basic knowledge and skills required to produce engineering and architectural drawings. Emphasis is given to the development of competencies related to the use of drafting equipment, the production of beginning level engineering drawings, and the production of beginning level architectural drawings.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

494710   Architecture/CADD I
Credit: 1   Grade Levels: 9-12
Architecture/CADD I focuses on the knowledge and skills required to plan and prepare scale pictorial interpretations of plans and design concepts for residential buildings. Emphasis is given to the development of competencies related to solving drafting and design problems that require the individual to understand and apply a wide range of technical knowledge and critical thinking skills. The course is designed to allow the student to produce drawings as traditional drawings or as computer-aided drawings.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical

Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

494730   Architecture/CADD II
Credit: 2   Grade Levels: 10-12
Architecture/CADD II focuses on the knowledge and skills required to plan and prepare scale pictorial interpretations of plans and design concepts for residential buildings. Emphasis is given to the development of competencies related to solving drafting and design problems that require the individual to understand and apply a wide range of technical knowledge and critical thinking skills. The course is designed to allow the student to produce drawings as traditional drawings or as computer-aided drawings.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

494720   Architecture/CADD Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute a comprehensive architectural product.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

Geospatial Technology

494910   GIS & Remote Sensing
Credit: .5   Grade Levels: 9-12
Skill-based training in GIS & Remote Sensing is a one-semester course designed to introduce students to the use of ArcView GIS software and software extensions through academic study and extensive applied instruction. Students will be introduced to terminology and concepts relating to ArcView GIS software and will apply these concepts through the use of industry-standard software.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 607   Geospatial Technology

494900   Intro to GIS
Credit: .5   Grade Levels: 9-12
Introduction to GIS/Remote Sensing is a one-semester course designed to introduce students to geographic information systems (GIS) and remote sensing (RS) technology through academic study and applied instruction. Students will be introduced to terminology and concepts relating to GIS/RS technology and will apply these concepts through the use of GIS software programs. Students will participate in structured, applied learning exercises taken from existing data sources, as well as conduct new study of these data sources through self-driven study and analysis.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 607   Geospatial Technology

494920   SPACE
Credit: 1   Grade Levels: 11-12
The purpose of this class is to provide students with advanced instruction in geographic information systems (GIS) and remote sensing (RS) technology through focused academic study and continued emphasis on applied instruction that began in the Year 2 class. While the Year 2 GIS/RS project had a small scope that was limited to the school environment, this class will provide emphasis placed on special geographic projects dealing with the local community environment that will be planned, conducted, and presented by the student, with guidance from community/industry mentors. Students will identify a community problem or situation that may be addressed using GIS/RS technology; interview necessary residents/community personnel relevant to the situation; identify and/or collect data needed for the project; perform necessary analyses; and present findings to peers, school personnel, and community stakeholders. Within the study parameters of the school-community partnership, students will gain relevant "hands-on," industry-specific experience and valuable career guidance information that will aid the student in either the continuing education or job placement environments.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 607   Geospatial Technology

494930   STARS
Credit: 1   Grade Levels: 10-12
Spatial Technology and Remote Sensing (STARS) is a one-year course designed to provide students with continued instruction in geographic information systems (GIS) and remote sensing (RS) technology. Students will receive instruction and guidance from the instructor acting in a facilitator capacity on topics including skill building in industry-standard geospatial extension software and geospatial tools, including global positioning systems (GPS), and continued training in GIS project management and problem solving. Each student will participate in applied-learning activities with emphasis placed on planning, conducting, and presenting three special projects dealing with the use of GIS/RS tools and data in various career cluster groups that deal with the immediate school environment. In addition to formally presenting projects to peers, school administration, and other interested parties, students will be encouraging these entities to use their solutions to improve the local environment.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 607   Geospatial Technology

HVACR
495100   HVACR I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to repair, install, service, and maintain the operating condition of heating, air conditioning, and refrigeration systems.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 578   HVACR

495110   HVACR II
Credit: 2   Grade Levels: 10-12
This instructional program prepares individuals to apply technical knowledge and skills to repair, install, service, and maintain the operating condition of heating, air conditioning, and refrigeration systems.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 578   HVACR

CLUSTER: GOVERNMENT & PUBLIC ADMINISTRATION

JROTC

495760   Air Force JROTC I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Air Force.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

495770   Air Force JROTC II
Credit: 1   Grade Levels: 10-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Air Force.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

495780   Air Force JROTC III
Credit: 1   Grade Levels: 11-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Air Force.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

495880   Air Force JROTC IV
Credit: 1   Grade Levels: 12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Air Force.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

495790   Army JROTC I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Army.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

495800   Army JROTC II
Credit: 1   Grade Levels: 10-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Army.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

495810   Army JROTC III
Credit: 1   Grade Levels: 11-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Army.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                               612   JROTC

Career & Technical Education

495890   Army JROTC IV
Credit: 1   Grade Levels: 12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Army.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

495820   Marine JROTC I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Marine Corps.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

495830   Marine JROTC II
Credit: 1   Grade Levels: 10-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Marine Corps.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

495840   Marine JROTC III
Credit: 1   Grade Levels: 11-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Marine Corps.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

495900   Marine JROTC IV
Credit: 1   Grade Levels: 12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Marine Corps.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

495850   Navy JROTC I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Navy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

495860   Navy JROTC II
Credit: 1   Grade Levels: 10-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Navy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                 612   JROTC

Career & Technical Education

495870   Navy JROTC III
Credit: 1   Grade Levels: 11-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Navy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                                        612   JROTC

495910   Navy JROTC IV
Credit: 1   Grade Levels: 12
This instructional program prepares individuals to apply technical knowledge and skills to enter into a component of the Navy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 220   JROTC Permit
                                                                        612   JROTC

CLUSTER: HEALTH SCIENCE

Medical Professions

495370   Abnormal Psychology
Credit: .5   Grade Levels: 9-12

This course provides a basic survey of maladaptive human behavior. Major psychological disorders, their causes, symptom behaviors, cultural influences, and relevant treatment approaches are discussed. Included topics are historical medical background, perspectives of treatment of the mentally ill, fundamental definitions, causes of anxiety disorders, disorders of mood including depression and bipolar disorder, personality disorders, disorders of thought including schizophrenia, substance-related disorders, and domestic violence. Legal, ethical, and social issues relating to the medical professional's role in treating psychological disorders are explored.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 611   Medical Professions

494140   DWE-Approved First Responder
Credit: 1   Grade Levels: 9-12

This course introduces students to emergency medical technician occupational skills. Prior approval must be obtained from the Technical and Professional Office before this course is implemented.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495300   Human Anatomy and Physiology
Credit: 1   Grade Levels: 9-12

This course focuses on anatomical and physiological systems of the body as well as the diseases of those systems.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495320   Human Behavior and Disorders
Credit: .5   Grade Levels: 9-12

This course focuses on normal behavior and personality, abnormal behavior and personality, and behavior disorders and the therapies used to treat those disorders and abnormalities.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495340   Introduction to Medical Professions
Credit: .5   Grade Levels: 9-12

This course provides a general overview of the many health-related occupations and the special concerns of the health care worker.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495380   Introduction to Medical Professions Extended
Credit: .5   Grade Levels: 9-12

This course is designed as an extension of Introduction to Medical Professions. The course provides students with a general overview of the more crucial content areas of the medical professions education program core courses. Areas covered are medical terminology, medical math, human growth and development, processes of disease, and employability skills needed within the health care industry. This course is recommended for students who will not have the opportunity to take any additional medical professions education courses other than Introduction to Medical Professions.

Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 611   Medical Professions

495350   Medical Apprenticeship/Work-Based Learning
Credit: 1   Grade Levels: 11-12
This is an educational program that alternates in-school instruction and supervised on-the-job training activities in medical professions occupations.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495310   Medical Clinical Internship/Specialization
Credit: 1   Grade Levels: 11-12
This is an educational program that alternates in-school instruction and supervised on-the-job training activities in medical professions occupations.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495330   Medical Procedures
Credit: .5   Grade Levels: 9-12
Medical Procedures is a one-unit course that helps students develop specific and general skills needed by the health care professional.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495390   Medical Procedures Expanded
Credit: .5   Grade Levels: 9-12
This course focuses on the specific skills needed in several different areas of health care. Students are able to build upon the skills gained in the Medical Procedures course. The different areas addressed are dental assisting, laboratory assisting, medical assisting, nurse assisting, physical therapy assisting, and veterinary assisting.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495360   Medical Terminology
Credit: .5   Grade Levels: 9-12
Medical Terminology is a one-semester course that assists students in developing the language used for communication in the health care profession.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

495290   Pathology
Credit: .5   Grade Levels: 9-12
This course is devoted to the exploration of human pathology. Pathology is the branch of medical science that studies the causes, nature, and effects of diseases. This course of study begins with an introduction to pathology-related terms, predisposing factors of diseases, the relationship between diagnosis and prognosis, and disease treatments. Following the introduction, the course delves into a range of pathology-related topics and their relationships to specific systems of the human body. The topics include signs and symptoms of pathology, the effects of trauma, the effects of age, and characteristics of common diseases.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 070   Health Occupations
                                                611   Medical Professions

CLUSTER: LAW, PUBLIC SAFETY, & SECURITY

Criminal Justice

494610   Criminal Law
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to perform the duties of police and public security officers, including witness interviewing, evidence collection and management, and basic crime prevention methods.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 603   Criminal Justice

494620   Introduction to Criminal Justice
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control, and public relations.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 603   Criminal Justice

494630   Law Enforcement I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control, and public relations.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 603   Criminal Justice

494600   Law Enforcement II
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control, public relations, and witness interviewing.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 603   Criminal Justice

Career & Technical Education

CLUSTER: MANUFACTURING

Furniture Manufacturing

494850   Furniture Manufacturing I
Credit: 1   Grade Levels: 9-12
This instructional program introduces basic principles of assembling and finishing wooden furniture.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 581   Furniture/Cabinet Making

494870   Furniture Manufacturing II
Credit: 2   Grade Levels: 10-12
Skills and techniques taught in this class will correlate more closely with manufacturing standards as determined by the furniture industry. Each student will assemble and finish a useful furniture piece as a required individual project.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 581   Furniture/Cabinet Making

494860   Furniture Manufacturing Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute a comprehensive furniture manufacturing product.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 581   Furniture/Cabinet Making

Industrial Equipment Maintenance

495150   Industrial Equipment Maintenance I
Credit: 1   Grade Levels: 9-12
The student will be trained to perform a variety of skills to repair, install, fabricate, set up, adjust, and do preventive maintenance to industrial machinery and equipment.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 585   Industrial Equipment Maintenance

495170   Industrial Equipment Maintenance II
Credit: 2   Grade Levels: 10-12
The student will be trained to perform a variety of skills to repair, install, fabricate, set up, adjust, and do preventive maintenance to industrial machinery and equipment.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 585   Industrial Equipment Maintenance

495160   Industrial Equipment Maintenance Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute comprehensive industrial equipment maintenance.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 585   Industrial Equipment Maintenance

Machine Tool

495200   Machine Tool I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to shape parts on machines, such as lathes, grinders, drill presses, and milling machines from various materials. Programs may also train in the use of individual machine tools.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 587   Machine Tool

495220   Machine Tool II
Credit: 2   Grade Levels: 10-12
This instructional program prepares individuals to shape parts on machines, such as lathes, grinders, drill presses, and milling machines from various materials. Programs may also train in the use of individual machine tools.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 587   Machine Tool

495210   Machine Tool Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute comprehensive machine tool technology.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 587   Machine Tool

Major Appliance Tech
495250   Major Appliance Technology I
Credit: 1   Grade Levels: 9-12
This course prepares individuals to engage in the diagnosis and repair of major appliances. Instruction will include units on safety, tools and equipment, fundamentals of electricity, and electric motors.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 588   Major Appliance

495270   Major Appliance Technology II
Credit: 2   Grade Levels: 10-12
This course prepares individuals to engage in the diagnosis and repair of major appliances. Instruction will include units on clothes washers, clothes dryers, refrigerators and freezers, dishwashers, and microwave ovens.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 588   Major Appliance

495260   Major Appliance Technology Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute comprehensive major appliance repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 588   Major Appliance

Welding
495550   Gas Metal Arc Welding
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of gas metal arc welders.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 597   Welding

495560   Gas Tungsten Arc Welding
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of gas tungsten arc welders.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 597   Welding

495570 Metal Fabrication
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 597   Welding

495580 Shielded Metal Arc Welding
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of shielded metal arc welders.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 597   Welding

CLUSTER: SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS

Computer Engineering

494400   Diagnostics
Credit: 1   Grade Levels: 9-12
This course will prepare individuals in the understanding and application of basic principles and use of microcomputer system hardware, peripheral devices, and operating system hardware.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 572   Computer Engineering

494410   Networking
Credit: 1   Grade Levels: 9-12
Students in Networking will acquire skills in understanding the function, installation, configuration, and diagnostic procedures for microcomputer local area network hardware, electronic components, peripheral devices, and operating system software.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 572   Computer Engineering

494420   Operations
Credit: 1   Grade Levels: 9-12
This course prepares individuals in the understanding and application of basic principles, operation, and use of microcomputer system hardware peripheral devices and operating system hardware.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 572   Computer Engineering

Drafting & Design

494700   Drafting & Design
Credit: 1   Grade Levels: 9-12
Drafting and Design focuses on the basic knowledge and skills required to produce engineering and architectural drawings. Emphasis is given to the development of competencies related to the use of drafting equipment, the production of beginning level engineering drawings and the production of beginning level architectural drawings.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

494740   Engineering/CADD I
Credit: 1   Grade Levels: 9-12
Engineering/CADD I focuses on the knowledge and skills required to produce advanced level engineering drawings. Emphasis is given to the development of competencies related to solving drafting and design problems that require the individual to understand and apply a wide range of technical knowledge and critical-thinking skills. The course is designed to allow the student to produce drawings as traditional drawings or as computer-aided drawings.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

494760   Engineering/CADD II
Credit: 2   Grade Levels: 10-12
Engineering/CADD II focuses on the knowledge and skills required to produce advanced level engineering drawings. Emphasis is given to the development of competencies related to solving drafting and design problems that require the individual to understand and apply a wide range of technical knowledge and critical-thinking skills. The course is designed to allow the student to produce drawings as traditional drawings or as computer-aided drawings.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

494750   Engineering/CADD Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute a comprehensive engineering product.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 575   Drafting and Design

Electronics

494800   Electronics I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to support the electronic engineer and other professionals in the design, development, modification, and testing of electronic circuits, devices, and systems.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 577   Electronics

494820   Electronics II
Credit: 2   Grade Levels: 10-12
This instructional program prepares individuals to support the electronic engineer and other professionals in the design, development, modification, and testing of electronic circuits, devices, and systems.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 577   Electronics

494810   Electronics Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute a comprehensive electronics product.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 577   Electronics

Pre-engineering

495440   Civil Engineering & Architecture
Credit: 1   Grade Levels: 11-12
This course builds upon the computer solid modeling design skills developed in Introduction to Engineering Design. Students will be presented with design problems that require the use of computer-aided drafting skills to develop solutions to the problems. They will evaluate the solutions using mass property analysis (study of the relationship among the design, function, and materials used), make appropriate modifications, and use prototyping equipment to produce 3-D models of the solutions. Students will be expected to communicate the process and results of their work through oral and written reports.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 606   Engineering Professions

495450   Computer-Integrated Manufacturing
Credit: 1   Grade Levels: 11-12
This course builds upon the computer solid modeling design skills developed in Introduction to Engineering Design. Students will be presented with design problems that require the use of Inventor to develop solutions to the problems. They will evaluate the solutions using mass property analysis (study of the relationship among the design, function, and materials used), make appropriate modifications, and use prototyping equipment to produce three-dimensional models of the solutions. Students will be expected to communicate the process and results of their work through oral and written reports.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 606   Engineering Professions

495460   Digital Electronics
Credit: 1   Grade Levels: 9-12
Digital Electronics is a course of study in applied digital logic. The course is patterned after the first-semester course in digital electronics taught in two- and four-year colleges. Students will study the application of electronic logic circuits and devices and apply Boolean logic to the solution of problems. Students will design circuits using Circuit Maker, export their designs to a printed circuit auto-routing program that generates printed circuit boards, and construct the design using chips and other components.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 606   Engineering Professions

495470   Engineering Design and Development
Credit: 1   Grade Levels: 12
In this course, students will work in teams of two to four to design and construct the solution to an engineering problem, applying the principles developed in the preceding four courses. The problem may be selected from a database of engineering problems, be a recognized national challenge, or be an original engineering problem identified by the team and approved by the instructor. The problems will involve a wide range of engineering applications (e.g., a school robo-mascot, automated solar water heater, remote control hover craft). Students will maintain a journal as part of a portfolio of their work. Each team will be responsible for delivering progress reports and making final presentations of its project for an outside review panel.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 606   Engineering Professions

495480   Introduction to Engineering Design
Credit: 1   Grade Levels: 9-12
Introduction to Engineering Design is an introduction course that develops students' problem-solving skills, with emphasis placed on the concept of developing a 3-D model or solid rendering of an object. Students focus on the application of visualization processes and tools provided by modern, state-of-the-art computer hardware and software. The course will emphasize the design development process of a product and how a model of that product is produced, analyzed, and evaluated, using a computer-aided design system. Various design applications will be explored with discussion of possible career opportunities.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 606   Engineering Professions

495490   Principles of Engineering
Credit: 1   Grade Levels: 9-12
Principles of Engineering is a broad-based survey course designed to help students understand the field of engineering and engineering technology and its career possibilities. Students will develop engineering problem-solving skills that are involved in postsecondary education programs and engineering careers. They will explore various engineering systems and manufacturing processes. They will also learn how engineers address concerns about the social and political consequences of technological change. The main purpose of this course is to experience through theory and hands-on, problem-solving activities what engineering is all about and to answer the question, "Is a career in engineering or engineering technology for me?"
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 606   Engineering Professions

CLUSTER: TRANSPORTATION, DISTRIBUTION & LOGISTICS

Automotive Collision

494300   Nonstructural Analysis/Repair
Credit: 1   Grade Levels: 9-12
This course concentrates on analysis and repair of the nonstructural components as they pertain to collision repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 567   Automotive Collision Repair

494310   Painting/Refinishing
Credit: 1   Grade Levels: 9-12
This course concentrates on painting and refinishing as they pertain to collision repair. The course includes causes and correction of finish defects.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 567   Automotive Collision Repair

494320   Structural Analysis/Repair
Credit: 1   Grade Levels: 10-12
This course concentrates on analysis and repair of the structural components as they pertain to collision repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 567   Automotive Collision Repair

Automotive Service Technology

494180   Brakes
Credit: 1   Grade Levels: 9-12
This course prepares individuals to engage in the diagnosis and repair of brakes. Instruction will include units on hydraulic system diagnosis and repair, drum brake diagnosis and repair, and disc brake diagnosis and repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 568   Automotive Service Technology

494190   Electrical Systems
Credit: 1   Grade Levels: 9-12
This course prepares individuals to engage in the diagnosis and repair of electrical/electronic systems. Instruction will include units on general electrical system diagnosis and service.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 568   Automotive Service Technology

494200   Engine Performance
Credit: 1   Grade Levels: 9-12
This course prepares individuals to engage in the diagnosis and repair of engine performance. Instruction will include units on general engine diagnosis and computerized engine controls diagnosis and repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 568   Automotive Service Technology

494210   Suspension & Steering
Credit: 1   Grade Levels: 9-12
This course prepares individuals to engage in the diagnosis and repair of suspension and steering. Instruction will include units on steering systems diagnosis and repair; suspension systems diagnosis and repair; wheel alignment diagnosis, adjustment, and repair; and wheel and tire diagnosis and repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 568   Automotive Service Technology

Aviation

494250   Aviation I
Credit: 2   Grade Levels: 9-12
This program will include instruction on the general core curriculum required by the Federal Aviation Administration.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 569   Aviation Mechanics

494260   Aviation II
Credit: 2   Grade Levels: 10-12
This program will include instruction on the general core curriculum required by the Federal Aviation Administration (FAA).
This course will prepare students for the Air Frame and Power Plant School certified by the FAA.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 569   Aviation Mechanics

Diesel Mechanics
494650   Diesel Mechanics I
Credit: 2   Grade Levels: 9-12
This instructional program prepares individuals to diagnose and repair diesel equipment in on-road and off-road vehicles and machinery.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 574   Diesel Mechanics

494660   Diesel Mechanics II
Credit: 2   Grade Levels: 10-12
This instructional program prepares individuals to diagnose and repair diesel equipment in on-road and off-road vehicles and machinery. Advanced on-the-job training may be included.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 574   Diesel Mechanics

Power Equipment Technology
495400   Power Equipment Technology I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to repair, service, and maintain small internal-combustion engines used on portable equipment, such as lawnmowers, chain saws, and rotary tillers.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 593   Power Equipment Technology

495420   Power Equipment Technology II
Credit: 2   Grade Levels: 10-12
This instructional program prepares individuals to apply technical knowledge and skills to repair, service, and maintain small internal-combustion engines used on portable equipment, such as lawnmowers, chain saws, and rotary tillers.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 593   Power Equipment Technology

495410   Power Equipment Technology Lab
Credit: 1   Grade Levels: 9-12
This production-based program is designed to allow for the development of skills and knowledge needed to execute comprehensive power equipment repair.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 593   Power Equipment Technology

690040   Driver's Education
Credit: .5   Grade Levels: 9-12
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 210   Driver Education
                                                417   Driver Education

493860   Internship
Credit: 1   Grade Levels: 11-12
This is a practical and supervised job experience designed to assist students to successfully transition from school-to-work or successfully continue their education in a chosen career focus/major area. Internships are individualized and competency-based.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 412   Career Preparation

493880   Workplace Readiness
Credit: .5   Grade Levels: 10-12
This one-semester course is designed to help students transition from school to work. It focuses on the SCANS competencies with emphasis on problem solving, teamwork, communication skills, and the use of technology.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 412   Career Preparation

460010   EAST/Workforce Technology
Credit: 1   Grade Levels: 9-12
This one year of EAST Lab experience is designed to help students transition from school to work. It focuses on the SCANS competencies with emphasis on problem solving, teamwork, communications skills, and the use of technology. It counts as one unit of credit toward completer status in any of the career and technical areas of study.
Does course count in required 38 units and, if yes, how: Yes   ADE
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 412   Career Preparation

Dry Cleaning

495180   Dry Cleaning I
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into the dry cleaning profession.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 576   Dry-clean/Laundry

495190   Dry Cleaning II
Credit: 1   Grade Levels: 9-12
This instructional program prepares individuals to apply technical knowledge and skills to enter into the dry cleaning profession.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 576   Dry-clean/Laundry

Special Populations

493800   JAG Apprenticeship/Work-Based Learning
Credit: 1   Grade Levels: 11-12
This is an instructor-supervised work release course that includes monthly employer evaluations of participants. Employment is not a requirement of the JAG program, but credit can be given at the discretion of the individual school district. Participants should be expected to complete 180 hours of work-based learning in order to receive one credit—w ith a maximum of four credits for completing 720 hours of work study within a consecutive two-year period.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 413   Career Services for Special Populations

493780   JAG Multi-Year I
Credit: 1   Grade Levels: 11-12
JAG utilizes the National Jobs for America's Graduates model. It is designed to assist career and technical students whose ability to successfully graduate from high school and obtain meaningful employment is in jeopardy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 413   Career Services for Special Populations

493790   JAG Multi-Year II
Credit: 1   Grade Levels: 11-12
JAG utilizes the National Jobs for America's Graduates model. It is designed to assist career and technical students whose ability to successfully graduate from high school and obtain meaningful employment is in jeopardy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 413   Career Services for Special Populations

493770   JAG Senior Applications
Credit: 1   Grade Levels: 12
JAG utilizes the National Jobs for America's Graduates model. It is designed to assist career and technical students whose ability to successfully graduate from high school and obtain meaningful employment is in jeopardy.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 413   Career Services for Special Populations

Technical & Professional (nonprogram specific)

590010   Cashier/Checker
Credit: .5   Grade Levels: 9-12
This course prepares individuals to apply technical knowledge and skills to become cashiers or checkers.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 600   Cashier/checker Instruction

590110   DWE-Approved Career & Technical Education
Credit: .5   Grade Levels: 9-12
This is a specialized CTE course for which the district must submit a framework and receive approval to teach. District must have a letter on file to use this course code.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: ANY   Technical and Professional Permit

590020   DWE-Approved Cisco Networking Academy
Credit: 1   Grade Levels: 9-12
Students will acquire skills in understanding the function, installation, configuration, and diagnostic procedures for microcomputer local area network hardware, electronic components, peripheral devices, and operating system software. Prior approval must be obtained from the Technical and Professional Office before this course is implemented.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 572   Computer Engineering

590030   DWE-Approved FIRST Robotics
Credit: 1   Grade Levels: 9-12
This course shows students that the technological fields hold many opportunities and that the basic concepts of science, math, engineering, and invention are exciting and interesting. Prior approval must be obtained from the Technical and Professional Office before this course is implemented.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 592   Robotics

590090   DWE-Approved Technical & Professional Course
Credit: 1   Grade Levels: 9-12
This course code is for districts that submit a framework for an approved technical/professional course for which frameworks do not exist. This course will not meet any requirement in the 38 units required to be offered, but it may count toward the six career focus units required for graduation.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: ANY   Technical and Professional Permit

590100   DWE-Approved Technical & Professional Lab
Credit: 1   Grade Levels: 9-12
This course is an extension of an existing career and technical program of study – to allow students more time for hands-on application of the approved framework/curriculum. This course will not count in the 38 units required to be taught, but it will count in the six units for a career focus.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: ANY   Technical and Professional Permit

494010   EITE I (9th grade)
Credit: .5   Grade Levels: 9
Exploring Industrial Technology Education (EITE) is an instructional program that has an intent to develop initial technological literacy through the student completing exploratory modules clustered around four technology occupation themes.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 100   Industrial Arts I
                                                101   Middle School Industrial Arts
                                                102   Industrial Arts II
                                                211   Industrial Tech Education
                                                212   Industrial Tech Education
                                                579   Exploring Industrial Technology

494020   EITE II (9th grade)
Credit: .5   Grade Levels: 9
Exploring Industrial Technology Education (EITE) is an instructional program that has an intent to develop initial technological literacy through the student completing exploratory modules clustered around four technology occupation themes.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 100   Industrial Arts I
                                                101   Middle School Industrial Arts
                                                102   Industrial Arts II
                                                211   Industrial Tech Education
                                                212   Industrial Tech Education
                                                579   Exploring Industrial Technology

494030   Industrial Apprenticeship/Work-Based Learning I
Credit: 1   Grade Levels: 9-12
Industrial Apprenticeship/Work-Based Learning I is an educational program that alternates in-school instruction and supervised on-the-job training activities in technical and professional occupations.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 584   Industrial Cooperative Training

494040   Industrial Apprenticeship/Work-Based Learning II
Credit: 1   Grade Levels: 10-12
Industrial Apprenticeship/Work-Based Learning II is an educational program that alternates in-school instruction and supervised on-the-job training activities in technical and professional occupations.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 584   Industrial Cooperative Training

590040   Industrial Tech Ed
Credit: 1   Grade Levels: 9-12
Industrial Technology Education is a program of instruction designed to prepare high school students to comprehend a technological society. Students will engage in activities enabling them to use, control, and create the various technology resources.
Does course count in required 38 units and, if yes, how: Yes Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 010   Agriculture
                                                100   Industrial Arts I
                                                102   Industrial Arts II
                                                211   Industrial Tech Education
                                                212   Industrial Tech Education
                                                579   Exploring Industrial Technology

Youth Apprenticeship

493950   Youth Apprenticeship
Credit: 1   Grade Levels: 11-12
This course code is for recognized and approved youth apprenticeship programs. Prior approval by the Department of Workforce Education is required.
Does course count in required 38 units and, if yes, how: Yes   Career & Technical
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: ANY

APPLIED SCIENCES

Principles of Technology

523000   Principles of Technology I
Credit: 1   Grade Levels: 10-12
PT II is designed as a hands-on, activity-based, applied physics course (it normally requires two years to complete PT I and PT II). One physics (science) credit toward graduation requirements shall be given students who complete the two-year PT course (PT I and PT II). One elective vocational credit or one physical science credit shall be given students who complete only one year of the PT course.
Does course count in required 38 units and, if yes, how: Yes   ADE-Approved Physical Science Elective
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 6541   Principles of Technology I

522000   Principles of Technology II
Credit: 1   Grade Levels: 10-12
PT II is designed as a hands-on, activity-based, applied physics course (it normally requires two years to complete PT I and PT II). One physics (science) credit toward graduation requirements shall be given students who complete the two-year PT course (PT I and PT II). One elective vocational credit or one physical science credit shall be given students who complete only one year of the PT course.
Does course count in required 38 units and, if yes, how: Yes   ADE-Approved Physics Elective
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 6542   Principles of Technology II

Physics in Context
522070   Physics in Context
Credit: 1   Grade Levels: 10-12
PIC is designed as a hands-on, activity-based, applied physics courses normally requiring one year to complete. Students will receive information and experiences from a balance of sources, such as class lecture, demonstrations and discussions, the text and workbook, audio-video/visual aids, math skills labs, hands-on physics applications labs, and review.
Does course count in required 38 units and, if yes, how: Yes   ADE-Approved Physics
Does course count in the 21 units required for graduation: Yes
Licensure required to teach this course: 6542   Principles of Technology II

MIDDLE SCHOOL COURSES

Gateway to Technology
399110   Automation and Robotics
Credit: 1   Grade Levels: 7-8
Students trace the history and development of automation and robotics. They learn about structures, energy transfer, and machine automation. They also find out what they need to study in high school and beyond to prepare for careers in engineering.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 606   Engineering Professions

399120   Design and Modeling
Credit: 1   Grade Levels: 7-8
Students will learn the uses of solid modeling. They will be introduced to the design process and shown how this technology has influenced their lives. Using design briefs or abstracts, students create models and documentation to solve problems.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 606   Engineering Professions

399130   The Magic of Electrons
Credit: 1   Grade Levels: 7-8
Students see the wonders of electricity and electronics by designing simple circuits and exploring the impact of electricity on our lives.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 606   Engineering Professions

399140   The Science of Technology
Credit: 1   Grade Levels: 7-8
Students trace how science has affected technology throughout history. Students learn about the mechanics of motion, the conversion of energy, and the use of science to improve communication.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 606   Engineering Professions

399200   DWE-Approved Career & Technical Education
Credit: 1   Grade Levels: 7-8
This is a specialized CTE course for which the district must submit a framework and receive approval to teach. District must have a letter on file to use this course code.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: ANY   Technical and Professional Permit

399150   EITE I (7-8 grade)
Credit: .5   Grade Levels: 7-8
Exploring Industrial Technology Education (EITE) is an instructional program that has an intent to develop initial technological literacy through the student completing exploratory modules clustered around four technology occupation themes.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 100   Industrial Arts I
                                              101   Middle School Industrial Arts
                                              102   Industrial Arts II
                                              211   Industrial Tech Education
                                              212   Industrial Tech Education
                                              579   Exploring Industrial Technology

399160   EITE II (7-8 grade)
Credit: .5   Grade Levels 7-8
Exploring Industrial Technology Education (EITE) is an instructional program that has an intent to develop initial technological literacy through the student completing exploratory modules clustered around four technology occupation themes.
Does course count in required 38 units and, if yes, how: No
Does course count in the 21 units required for graduation: No
Licensure required to teach this course: 100   Industrial Arts I
                                              101   Middle School Industrial Arts
                                              102   Industrial Arts II
                                              211   Industrial Tech Education
                                              212   Industrial Tech Education
                                              579   Exploring Industrial Technology

Career & Technical Education

COMPUTER SYSTEM FOR: **MIDDLE SCHOOL**
                           JR HIGH SCHOOL
                           HIGH SCHOOL
                           INSTRUCTOR/TEACHER

LEVEL I

Pentium® 4 processor (or equivalent) 2.80GHz, 800 MHz, 512K cache, 512MB DDR RAM, 17" CTL, true flat panel color monitor or 17" CRT true flat screen monitor, integrated video graphics card, 40GB hard drive, 1.44MB 3.5-inch floppy drive, USB 2-button optical mouse with scroll, integrated (10/100/1000) network card, 52x32x52X DVDRW OR 48x or 52x CDRW-ROM, integrated sound blaster compatible, speakers w/headphones, Internet accessible

TECHNICAL & PROFESSIONAL
Automotive Service Technology
Aviation Mechanics
Collision Repair Technology
Computer Engineering
Construction Technology
Diesel Mechanics
Electronics
Exploring Industrial Tech Ed.
Furniture Manufacturing
HVACR
Industrial Equipment Maint.
JROTC
Major Appliance Repair
Machine Tool Technology
Medical Professions Education
Physics in Context
Power Equipment Technology
Welding Technology

COMPUTER SYSTEM FOR: PROGRAM SPECIFIC
INSTRUCTOR/TEACHER

LEVEL II

Pentium® 4 processor (or equivalent) 3.20GHz, 800MHz, 512K cache, 1 GB DDR RAM, 17" CTL, LCD flat panel color display, integrated video graphics card, (2) 80GB hard drives, 1.44MB 3.5-inch floppy drive, USB 2-button optical mouse with scroll, integrated (10/100/1000) network card, 48X or 52X DVD+R, DVD writer 48X or 52X CD ROM, integrated sound blaster compatible, speakers w/headphones, Internet accessible

TECHNICAL & PROFESSIONAL
Criminal Justice
Drafting & Design
Geospatial Technology
Pre-engineering
Gateway to Technology

COMPUTER SYSTEM FOR: **MIDDLE SCHOOL**
                                    JR HIGH SCHOOL
                                    HIGH SCHOOL
                                    INSTRUCTOR/TEACHER

LEVEL I

Pentium 4, 3.0GHZ, 800 MHz, LGA775, mid tower ATX case, w/300w power supply, FUSB 80.0GB hard drive, 7200 rpm, 512 MB DDR2-533 RAM, integrated video graphics card, 17" monitor, true flat screen, color CRT (tube) 1.44 MB floppy drive, 104-key Win keyboard, optical wheel mouse w/pad, DVD/CDRW combo drive, 48x or 52x CD-ROM drive, integrated audio w/AC speakers & headphones, Microsoft Window XP Pro operating system, 10/100/1000 integrated network card

Technical & Professional Education
Architecture & Construction Cluster
Government & Public Administration Cluster
Health Science Cluster
Manufacturing Cluster
Transportation, Distribution, & Logistics Cluster

COMPUTER SYSTEM FOR: **PROGRAM SPECIFIC**
INSTRUCTOR/TEACHER

LEVEL II

Pentium 4, 3.20 GHz, 800MHz, LGA775, mid tower ATX case, w/300w power supply, FUSB (2) 80.0 GB hard drives, 7200 rpm, 1 GB DDR2-533 RAM, integrated video graphics card, 17" LCD flat panel color display, 1.44 MB floppy drive, multimedia keyboard, optical wheel mouse w/pad, DVD+R, DVD write, dual layer, 48x or 52x CD-ROM drive, integrated audio w/AC speakers & headphones, Microsoft Windows XP Pro operating system, 10/100/1000 integrated network card

Technical & Professional Education
Architecture and Construction Cluster
Law, Public Safety, & Security Cluster
Science, Technology, Engineering, & Mathematics Cluster

OFFICE OF TECHNICAL AND PROFESSIONAL EDUCATION

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CAREER CLUSTERS: ARCHITECTURE AND CONSTRUCTION; GOVERNMENT AND PUBLIC ADMINISTRATION; HEALTH SCIENCE; LAW, PUBLIC SAFETY, AND SECURITY; MANUFACTURING; SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS; TRANSPORTATION, DISTRIBUTION, AND LOGISTICS

Program Description

Technical and professional education is a group of instructional programs that prepare individuals to apply technical knowledge and skills in one or more trade, technical, and/or professional occupations. Students will engage in activities and instruction enabling them to use, create, problem solve, and control various technology resources—people, tools, machines, information, materials, energy, capital, and time.

Occupational Programs

There are seven career clusters from which students may choose. Specific courses are required for each of the programs of study (pathways); in addition, various options may be selected to complete the required curriculum.

Student Organization

The appropriate career and technical student organization, SkillsUSA for all occupational programs and/or Technology Student Association (TSA) for all technology education programs, shall be an integral part of each instructional program respectively and shall follow the same guidelines, goals, objectives, and participate in activities of the Arkansas state chapter and the respective national organization.

MEDICAL PROFESSIONS EDUCATION

Cluster: Health Science

Planning, managing, and providing diagnostic, therapeutic, and information and environmental services in health care

Program Description

Medical professions education programs are designed to assist students in gaining the skills and knowledge needed to become contributing members of the health career community. The program is designed to provide completers with entry-level employment skills, initial mastery certification in a chosen health services career, and the opportunity to articulate with a postsecondary program leading to a higher level of mastery.

Occupational Programs

All start-up programs must follow the framework. Programs will be known as **medical professions education** programs.

Programs of Study

Medical professions education includes common core courses that are basic to all medical professions. Specialization experiences are designated to meet career objectives of students enrolled. Specific career focus programs of study are determined by these objectives. Examples of programs of study that may be offered include:

Therapeutic Services Pathway:

Programs of study:
- Dental assisting
- Medical assisting
- Nursing assistant/geriatric aide
- Physical therapy aide
- Medical professions, other (physicians, dentists, nurses, therapists, etc.)

Health Informative Pathway:

Program of study:
- Medical records clerk

Student Organization

The appropriate career and technical student organization shall be either Health Occupation Students of America (HOSA) or SkillsUSA. These organizations shall be an integral part of medical professions instructional courses and shall follow the same guidelines, goals, objectives, and participate in activities of the Arkansas state chapter and the respective national organization.

APPLIED SCIENCES

Philosophy

Career and technical education instruction is designed to prepare specialized workers at the technician level in occupational fields that include the technology supportive to professional engineers, scientists, physicians, and managers. Usually technology implies an extensive concentration in a particular occupational field along with the associated mathematics (algebra, as a minimum) and science (usually physics). Consequently, many technical programs are usually offered in a two-year postsecondary education environment. However, to prepare students for a technological society and equip them with the academic skills and technical principles sufficient to allow them to succeed in advanced technical programs/classes, two courses are available at the secondary level. Principles of Technology is a well-established, two-year course while the new Physics in Context course is a one-year course.

Course Description

Principles of Technology (PT) and Physics in Context (PIC) are instructional courses for secondary students interested in technical careers and other students wishing to further their understanding of the physical principles underlying modern technology. (The PIC course was derived from the PT course.) These courses provide instruction in mechanical, fluid, electrical, and thermal principles on which modern equipment operates and the mathematics associated with these principles. These courses may be taught to provide an alternative for increased course work in science and provide two units or one unit, respectively, of applied and laboratory science toward graduation.

Course Type, Length, Curriculum, and Course Credit

PT and PIC are designed as hands-on, activity-based, applied-physics courses normally requiring two years and one year, respectively, to complete. Students will receive information and experiences from a balance of sources, such as class lectures, demonstrations, discussions, the text and workbook, audio-video/visual aids, math skills labs, hands-on physics applications labs, and review.

Since the new PIC course is designed as a one-year course, it has only 10 units instead of 14 and does not review the required math in "math labs" as found in the PT curriculum.

The PT or PIC teacher shall follow the Center for Occupational Research and Development (CORD) teacher manuals, which are used as the course content guide for these courses. Since the science frameworks published by ADE are not as specific as the CORD PT objectives, the end-of-course tests for PT are correlated to the objectives found in the CORD PT and PIC curriculum.

One physics (science) credit toward graduation requirements shall be given students who complete the two-year PT course (PT I and PT II). One elective vocational credit or one physical science credit shall be given students who complete only one year of the PT course. One physics (science) credit toward graduation requirements shall be given students who complete the one-year PIC course.

Eligibility of Students

Students in the 10th, 11th, and 12th grade shall have the option of choosing the PT course, but students shall have a sound understanding of mathematics, including Algebra I, prior to entering the PT and PIC courses.

Student Organization

PT and PIC students are encouraged to join the SkillsUSA student organization.

Programs of study by career clusters:

Architecture and Construction Cluster

Designing, planning, managing, building, and maintaining physical structures and the larger built environment, including roadways and bridges and industrial, commercial, and residential facilities and buildings

Construction Pathway
Construction Technology Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494460	Carpentry	1			X	X	X	X

Construction Pathway
HVACR Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495100	HVACR I	1			X	X	X	X
495110	HVACR II	2				X	X	X

Design Pre-construction Pathway
Drafting and Design Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
	Architecture							
494700	Drafting & Design	1			X	X	X	X
494710	Architecture/CADD I	1			X	X	X	X
494730	Architecture/CADD II	1				X	X	X

Design Pre-construction Pathway
Geospatial Technology

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494910	GIS & Remote Sensing (GIS/RS)	.5			X	X	X	X
494900	Intro to GIS	.5			X	X	X	X
494920	Spatial Projects & Community Exchange (SPACE)	1					X	X
494930	Spatial Technology & Remote Sensing (STARS)	1				X	X	X

Career & Technical Education

Government and Public Administration Cluster

Executing governmental functions to include governance; national security; foreign service; planning; revenue and taxation; regulation; and management and administration at the local, state, and federal levels

National Security Pathway
JROTC Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495760	Air Force JROTC I	1			X	X	X	X
495770	Air Force JROTC II	1				X	X	X
495780	Air Force JROTC III	1					X	X
495790	Army JROTC I	1			X	X	X	X
495800	Army JROTC II	1				X	X	X
495810	Army JROTC III	1					X	X
495820	Marine JROTC I	1			X	X	X	X
495830	Marine JROTC II	1				X	X	X
495840	Marine JROTC III	1					X	X
495850	Navy JROTC I	1			X	X	X	X
495860	Navy JROTC II	1				X	X	X
495870	Navy JROTC III	1					X	X

Health Science Cluster

Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development

Therapeutic Services Pathway
Medical Professional Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495300	Human Anatomy & Physiology	1				X	X	X
495330	Medical Procedures	.5			X	X	X	X
495340	Introduction to Medical Professions	.5			X	X	X	X

Law, Public Safety, Corrections and Security Cluster

Planning, managing, and providing judicial, legal, and protective services, including professional and technical support services in the fire protection and criminal justice systems

Law Enforcement Services Pathway
Criminal Justice Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494600	Law Enforcement II	1			X	X	X	X
494620	Intro to Criminal Justice	1			X	X	X	X
494630	Law Enforcement I	1			X	X	X	X

Manufacturing Cluster

Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities, such as production planning and control, maintenance, and manufacturing/process engineering

Production Pathway
Furniture Manufacturing Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494850	Furniture Manufacturing I	1			X	X	X	X
494870	Furniture Manufacturing II	2				X	X	X

Maintenance, Installation, and Repair Pathway
Industrial Equipment Maintenance Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495150	Industrial Equipment Maintenance I	1			X	X	X	X
495170	Industrial Equipment Maintenance II	2				X	X	X

Production Pathway
Machine Tool Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495200	Machine Tool I	1			X	X	X	X
495220	Machine Tool II	2				X	X	X

Maintenance, Installation, and Repair Pathway
Major Appliance Technology Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495250	Major Appliance Technology I	1			X	X	X	X
495270	Major Appliance Technology II	2				X	X	X

Production Pathway
Welding Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495550	Gas Metal Arc Welding	1			X	X	X	X
495570	Metal Fabrication	1			X	X	X	X
495580	Shielded Metal Arc Welding	1			X	X	X	X

Career & Technical Education

Science, Technology, Engineering, and Mathematics Cluster

Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering), including laboratory and testing services and research and development services

Engineering and Technology Pathway
Computer Engineering Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494400	Diagnostics	1			X	X	X	X
494410	Networking	1			X	X	X	X
494420	Operations	1			X	X	X	X

Engineering and Technology Pathway
Drafting and Design Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
	Engineering							
494700	Drafting & Design	1			X	X	X	X
494740	Engineering/CADD I	1			X	X	X	X
494760	Engineering/CADD II	1				X	X	X

Engineering and Technology Pathway
Electronics Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494800	Electronics I	1			X	X	X	X
494820	Electronics II	2				X	X	X

Engineering and Technology Pathway
Pre-engineering Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495460	Digital Electronics	1			X	X	X	X
495480	Introduction to Engineering Design	1			X	X	X	X
495490	Principles of Engineering	1			X	X	X	X

Career & Technical Education

Transportation, Distribution, and Logistics Cluster

Planning, managing, and moving of people, materials, and goods by road, pipeline, air, rail, and water and related professional and technical support services, such as transportation infrastructure planning and management, logistic services, and mobile equipment and facility maintenance

Facility and Mobile Equipment Maintenance Pathway
Automotive Collision Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494300	Nonstructural Analysis/Damage Repair	1			X	X	X	X
494310	Painting & Refinishing	1			X	X	X	X
494320	Structural Analysis/Damage Repair	1				X	X	X

Facility and Mobile Equipment Maintenance Pathway
Automotive Service Technology Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494190	Electrical Systems	1			X	X	X	X
494200	Engine Performance	1			X	X	X	X

Facility and Mobile Equipment Maintenance Pathway
Aviation Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494250	Aviation I	2			X	X	X	X
494260	Aviation II	2				X	X	X

Facility and Mobile Equipment Maintenance Pathway
Diesel Mechanics Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
494650	Diesel Mechanics I	2			X	X	X	X
494660	Diesel Mechanics II	2				X	X	X

Facility and Mobile Equipment Maintenance Pathway
Power Equipment Technology Program of Study

Course Code	Core Requirements	Units of Credit	7th	8th	9th	10th	11th	12th
495400	Power Equipment Technology I	1			X	X	X	X
495420	Power Equipment Technology II	2				X	X	X

TECHNICAL AND PROFESSIONAL:

Course Code	Elective Courses	Units of Credit	7th	8th	9th	10th	11th	12th
	Architecture & Construction							
	Construction Technology:							
494450	Bricklaying	1			X	X	X	X
494460	Carpentry	1			X	X	X	X
494470	Concrete Masonry	1			X	X	X	X
494480	Construction Fundamentals	1			X	X	X	X
494490	Drywall	1			X	X	X	X
494500	Electrical	1			X	X	X	X
494510	Plumbing	1			X	X	X	X
	Drafting & Design:							
494700	Drafting & Design	1			X	X	X	X
494710	Architecture/CADD I	1			X	X	X	X
494720	Architecture/CADD Lab	1			X	X	X	X
494730	Architecture/CADD II	1				X	X	X
	Geospatial Technology:							
494910	GIS & Remote Sensing (GIS/RS)	.5			X	X	X	X
494900	Intro to GIS	.5			X	X	X	X
494920	Spatial Projects & Community Exchange (SPACE)	1					X	X
494930	Spatial Technology & Remote Sensing (STARS)	1				X	X	X
	Heating Ventilation, AC, & Refrigeration:							
495100	HVACR I	1			X	X	X	X
495110	HVACR II	2				X	X	X
	Government & Public Administration							
	JROTC:							
495760	Air Force JROTC I	1			X	X	X	X
495770	Air Force JROTC II	1				X	X	X
495780	Air Force JROTC III	1					X	X
495880	Air Force JROTC IV	1						X
495790	Army JROTC I	1			X	X	X	X
495800	Army JROTC II	1				X	X	X
495810	Army JROTC III	1					X	X
495890	Army JROTC IV	1						X
495820	Marine JROTC I	1			X	X	X	X
495830	Marine JROTC II	1				X	X	X
495840	Marine JROTC III	1					X	X
495900	Marine JROTC IV	1						X
495850	Navy JROTC I	1			X	X	X	X
495860	Navy JROTC II	1				X	X	X
495870	Navy JROTC III	1					X	X
495910	Navy JROTC IV	1						X
	Health Science							
	Medical Professions Education:							
495370	Abnormal Psychology	.5			X	X	X	X
495300	Human Anatomy & Physiology	1				X	X	X
495320	Human Behavior & Disorders	.5			X	X	X	X
495340	Introduction to Medical Professions	.5			X	X	X	X
495380	Introduction to Medical Professions Extended	.5			X	X	X	X
495350	Medical Apprenticeship/Work-Based Learning	1					X	X
495310	Medical Clinical Internship/Specialization	1					X	X
495330	Medical Procedures	.5			X	X	X	X
495390	Medical Procedures Expanded	.5			X	X	X	X
495360	Medical Terminology	.5			X	X	X	X
	Law, Public Safety, & Security							
	Criminal Justice:							
494600	Law Enforcement II	1			X	X	X	X
494610	Criminal Law	1			X	X	X	X
494620	Intro to Criminal Justice	1			X	X	X	X
494630	Law Enforcement I	1			X	X	X	X

Career & Technical Education

Course Code	Elective Courses	Units of Credit	7th	8th	9th	10th	11th	12th
	Manufacturing							
	Furniture Manufacturing:							
494850	Furniture Manufacturing I	1			X	X	X	X
494860	Furniture Manufacturing Lab	1			X	X	X	X
494870	Furniture Manufacturing II	2				X	X	X
	Industrial Equipment Maintenance:							
495150	Industrial Equipment Maintenance I	1			X	X	X	X
495160	Industrial Equipment Maintenance Lab	1			X	X	X	X
495170	Industrial Equipment Maintenance II	2				X	X	X
	Machine Tool:							
495200	Machine Tool I	1			X	X	X	X
495210	Machine Tool Lab	1			X	X	X	X
495220	Machine Tool II	2				X	X	X
	Major Appliance Technology:							
495250	Major Appliance Technology I	1			X	X	X	X
495260	Major Appliance Technology Lab	1			X	X	X	X
495270	Major Appliance Technology II	2				X	X	X
	Welding:							
495550	Gas Metal Arc Welding	1			X	X	X	X
495560	Gas Tungsten Arc Welding	1			X	X	X	X
495570	Metal Fabrication	1			X	X	X	X
495580	Shielded Metal Arc Welding	1			X	X	X	X
	Science, Technology, Engineering, & Mathematics							
	Computer Engineering:							
494400	Diagnostics	1			X	X	X	X
494410	Networking	1			X	X	X	X
494420	Operations	1			X	X	X	X
	Drafting & Design:							
494700	Drafting & Design	1			X	X	X	X
494740	Engineering/CADD I	1			X	X	X	X
494750	Engineering/CADD Lab	1			X	X	X	X
494760	Engineering/CADD II	1				X	X	X
	Electronics:							
494800	Electronics I	1			X	X	X	X
494810	Electronics Lab	1			X	X	X	X
494820	Electronics II	2				X	X	X
	Pre-engineering:							
495440	Civil Engineering & Architecture	1					X	X
495450	Computer-Integrated Manufacturing	1					X	X
495460	Digital Electronics	1			X	X	X	X
495470	Engineering Design & Development	1						X
495480	Introduction to Engineering Design	1			X	X	X	X
495490	Principles of Engineering	1			X	X	X	X
	Transportation, Distribution, & Logistics							
	Automotive Collision:							
494300	Nonstructural Analysis/Repair	1			X	X	X	X
494310	Painting/Refinishing	1			X	X	X	X
494320	Structural Analysis/Repair	1				X	X	X
	Automotive Service Technology:							
494180	Brakes	1			X	X	X	X
494190	Electrical Systems	1			X	X	X	X
494200	Engine Performance	1			X	X	X	X
494210	Suspension & Steering	1			X	X	X	X
	Aviation:							
494250	Aviation I	2			X	X	X	X
494260	Aviation II	2				X	X	X
	Diesel Mechanics:							
494650	Diesel Mechanics I	2			X	X	X	X
494660	Diesel Mechanics II	2				X	X	X

Career & Technical Education

Course Code	Elective Courses	Units of Credit	7th	8th	9th	10th	11th	12th
	Power Equipment Technology:							
495400	Power Equipment Technology I	1			X	X	X	X
495420	Power Equipment Technology II	2				X	X	X
495410	Power Equipment Technology Lab	1			X	X	X	X

Course Code	Elective Courses	Units of Credit	7th	8th	9th	10th	11th	12th
	Diesel Mechanics:							
494650	Diesel Mechanics I	2			X	X	X	X
494660	Diesel Mechanics II	2				X	X	X
	Power Equipment Technology:							
495400	Power Equipment Technology I	1			X	X	X	X
495420	Power Equipment Technology II	2				X	X	X
495410	Power Equipment Technology Lab	1			X	X	X	X

Course Code	Special Elective Courses	Units of Credit	7th	8th	9th	10th	11th	12th
	Seek DWE prior approval before implementation.							
399200	Career & Technical Education	.5	X	X				
590110	Career & Technical Education	.5			X	X	X	X
590020	CISCO Networking Academy	1			X	X	X	X
494140	First Responder	1			X	X	X	X
590030	FIRST Robotics	1			X	X	X	X
590090	Technical & Professional Course	1			X	X	X	X
590100	Technical & Professional Lab	1			X	X	X	X

Course Code	Nonprogram Specific Electives	Units of Credit	7th	8th	9th	10th	11th	12th
590010	Cashier Checker	.5			X	X	X	X
494010	Exploring Industrial Tech Ed I	.5			X			
494020	Exploring Industrial Tech Ed II	.5			X			
494030	Industrial Apprenticeship/Work-Based Learning I	1			X	X	X	X
494040	Industrial Apprenticeship/Work-Based Learning II	1				X	X	X
590040	Industrial Tech Ed	1			X	X	X	X

Course Code	Other Miscellaneous Electives	Units of Credit	7th	8th	9th	10th	11th	12th
690040	Driver Education	.5			X	X	X	X
495180	Dry Cleaning I	1			X	X	X	X
495190	Dry Cleaning II	2			X	X	X	X

Course Code	Middle School Electives	Units of Credit	7th	8th	9th	10th	11th	12th
399110	Automation & Robotics	.5	X	X				
399120	Design & Modeling	.5	X	X				
399130	The Magic of Electrons	.5	X	X				
399140	The Science of Technology	.5	X	X				
399150	EITE I	.5	X	X				
399160	EITE II	.5	X	X				

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: TRANSPORTATION, DISTRIBUTION, AND LOGISTICS
PATHWAY: FACILITY AND MOBILE EQUIPMENT MAINTENANCE
PROGRAM OF STUDY: AUTOMOTIVE COLLISION

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air chisel set	2 sets	2 sets	2 sets	Assorted chisel types
Air compressor	2	2	2	5 hp, 2 stage, w/80 gal. tank each or a total of 160 gal. or greater capacity
Air drill	1	1	1	3/8" drive
Air file	2	4	5	Orbital or straight line
Air hammer	2	2	2	
Air nibbler	1	1	2	1/2 hp
Air ratchet	1	1	2	3/8" drive
Air regulators	10	10	10	Including water and/or oil extractors
Battery charger/boost starter	1	1	1	Heavy-duty
Body straightening equipment	1	1	1	Bench/rack or floor-mounted system w/multiple pull capability
Chisels & punches	2 sets	2 sets	2 sets	Assorted
Come-along	2	2	2	2-ton minimum
Computer system, teacher's	1	1	1	See Technology Standards
Computer printer	1	1	1	
Dolly set	3 sets	4 sets	5 sets	Assorted
Files	3 sets	4 sets	5 sets	Assorted
Grinder, bench	1	1	1	1 hp or larger
Grinder, body	3	4	5	7", air or electric
Jack stands, dolly	4 pair	4 pair	4 pair	2-ton minimum
Jack, body & fender	1	1	1	4-ton minimum, w/attachments
Jack, body & fender	1	1	1	10-ton minimum, w/attachments
Jack, floor	2	2	2	2-ton minimum
Masking machines	2	2	2	
Multimeter	2	2	2	Digital
Paint booth	1	1	1	OSHA-approved
Paint dryer, infrared	1	1	1	
Paint gun	2	2	2	Detail

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Paint gun	2	2	2	Color
Paint gun	2	2	2	Primer
Pliers set, vise grip	6 sets	8 sets	10 sets	
Polisher	1	2	3	Air or electric
Sandblaster	1	1	1	
Sander	6	8	10	Pneumatic, dual-action, 6", rotary, random orbital
Snips, sheet metal	1 set	2 sets	3 sets	Aviation & standard
Socket set	1	2	3	Impact, 1/2" drive, standard & metric
Socket set	1	2	3	1/2" drive, standard & metric
Socket set	1	2	3	1/4" drive, standard & metric
Tap & die set	1	1	1	Standard & metric
Torch, plasma cutting	1	1	1	
Tram & centerline datum gauges	1	1	1	
Welder, MIG	2	2	2	
Welder, Oxyacetylene	2	2	2	Welding, cutting, & brazing capability
Workbenches	3	4	5	Steel, 60" x 30"
Wrench set, combination	2 sets	2 sets	3 sets	5/16"-1 1/16", standard & metric
Wrench, air impact	2	2	3	1/2" drive

CLUSTER: TRANSPORTATION, DISTRIBUTION, AND LOGISTICS
PATHWAY: FACILITY AND MOBILE EQUIPMENT MAINTENANCE
PROGRAM OF STUDY: AUTOMOTIVE SERVICE TECHNOLOGY

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
HAND TOOLS				
Pliers set	3	4	5	Combination 6", needle nose 6", hose clamp, side cutters, locking jaw, slip joint (water pump)
Pry bar	3	4	5	Rolling head, straight
Punch set	3	4	5	Pin – 5/16", ¼", 3/16", & 1/8"; taper – 5/8", ½", & 3/8"; center; brass drift
Screwdrivers set	3	4	5	Slotted: stubby – 6", 9", 12", offset Phillips: stubby – #1 & #2; 6" – #1 & #2; 12" -- #3; offset – #2 Posidrive: #1, #2, #3, #4 Impact driver set torx: T-8, T-10, T-15, T-20, T-25, T-27, T-30, T-40, T-50, T-55
Socket set	3	4	5	½" drive; 7/16"-1 1/8" U.S. standard & deep socket; 10 mm-25 mm standard & deep socket; extensions (3", 6", 12"); flex handle; ratchets
Socket set	3	4	5	¼" drive; ¼"-½" standard & deep socket; 6 mm-12 mm standard & deep socket; flex/univ. joint; ratchet; extensions (3", 6")

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Socket set	3	4	5	3/8" drive 5/16"-3/4" standard (6 pt.); 3/8"-3/4" deep socket (6 pt.); 9 mm-19 mm standard & deep socket; extensions (3", 6", 12", 18"); flexhead ratchet; universal joint, ratchet; speed handle; 5/8" & 13/16" spark plug sockets; 3/8"-3/4" flex socket set; 9 mm-19 mm flex socket set
Wrench set, combination	3	4	5	1/4"-1", 7 mm-19 mm
Wrench set, crowfoot	3	4	5	Standard & metric
Wrench set, flare nut	1	1	1	3/8"-3/4"(tubing), 10 mm-17 mm
Wrench set, ignition	3	4	5	Standard & metric
Wrench, impact	3	4	5	1/2" drive
Wrench, impact	3	4	5	3/8" drive
Wrench, torque	3	4	5	3/8" drive, 10-250 lb.in. 3/8" drive, 5-75 lb.ft. 1/2" drive, 50-250 lb.ft.
GENERAL LABORATORY EQUIPMENT				
Air chisel & bit set	3	4	5	Including adapters & various bits
Air compressor	1	1	1	5-10 hp, 100 gal.
Air delivery system	1	1	1	W/pressure regulator & piping system, minimum 2 air outlets per work area in lab
Air ratchet	3	4	5	3/8" drive
Caliper set, vernier	1	1	1	0"-6", 0 mm-125 mm
Charger, battery	1	1	1	40 amp, 12 v
Cleaning tank, parts	2	2	2	Nonsolvent based cleanser suggested
Compression tester	1	1	1	
Computer scan tool	1	1	1	Hand-held or PC w/interface capability for onboard diagnostics (OBD II trouble code compliant)
Computer system, teacher's	1	1	1	See Technology Standards

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Computer printer	1	1	1	See Technology Standards
Coolant/combustion gas detector	1	1	1	
Cooling system pressure tester	3	3	3	Including adapters
CV joint service tools	1	1	1	Including boot installation tool & boot clamping pliers or crimping ring
Cylinder leakage tester	1	1	1	
Dial indicator sets	3	4	5	Including flex arm & clamp base
Dispenser, gear lube	3	4	5	
Drill bit set	3	4	5	Twist drill, 1/64"-1/2", high speed
Drill, electric	3	4	5	1/2", variable speed, reversible
Drill, electric	3	4	5	3/8", variable speed, reversible
Grinder, bench or pedestal	1	1	1	6" diameter wheel
Hoist	2	2	2	Swing arm, frame contact
Jack, floor	3	4	5	Hydraulic, 2-ton
Meters, tach/ADWEll	3	4	5	Hand-held
Micrometer set	1	1	1	Outside type: 0-1", 1"-2", 2"-3", 3"-4", 4"-5"
Micrometer, depth	1	1	1	
Multimeter, digital	3	4	5	AC/DC, volts, ohms & amps, w/various lead sets
Pliers set, snap ring	3	4	5	Internal & external
Press, hydraulic	1	1	1	25-ton, w/adapters (piston pin press & adapters)
Puller set, master gear	1	1	1	Complete w/cabinet
Recovery system, engine coolant	1	1	1	Recycler or coolant disposal contract services
Socket set, impact	1	1	1	½" drive, 12 mm-32 mm
Socket sets, impact	1	1	1	½" drive, 7/16"-1 1/8"
Socket sets, impact	1	1	1	3/8" drive, standard & metric
Stands, jack	8 pair	8 pair	8 pair	5-ton, 4-leg, safety stands
Tap & die set	1	1	1	Standard & metric

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Thread repair insert kit	1	1	1	
Tubing bender	1	1	1	
Tubing cutter & flaring set	1	1	1	
V-blocks	1	1	1	
Vise, bench	10	10	10	Fitted to steel workbenches
Waste oil receptacle	1	1	1	Extension neck & funnel
Welder, portable	1	1	1	Oxyacetylene unit (complete welding outfit w/cutting torch attachments, bottles, & cylinder truck)
Workbench, steel	10	10	10	30" x 72", all worktables and workbenches are to be metal
Wrench, impact	1	1	1	1/2" & 3/8" drive

SPECIALTY AREA EQUIPMENT

The "specialty area equipment" section covers the additional equipment an automotive laboratory should have for training in the specialty area. Some of the tools and equipment may be the same as for other specialty areas. Because the equipment is specialized, and to provide quality instruction, the equipment must be available in the laboratory. The quantity listed allows equipment to be used in more than one specialty area.

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Ball joint press & other special tools	1	1	1	
Chassis lubricator system	1	1	1	
Compressor, spring/strut	1	1	1	
Dial indicator set	1	1	1	
Socket wrench, drag link	3	4	5	
Tire mounting machine	1	1	1	Rim clamp suggested
Wheel alignment equipment	1	1	1	4-wheel w/rack, including alignment tools
Wheel balancer	1	1	1	Off car type

BRAKES

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Asbestos contamination removal system	1	1	1	OSHA-approved
Bleeder, brake	2	2	2	Pressure
Lathe, brake	1	1	1	Mobile or stationary, including disk & drum service attachments
Micrometer, brake disk	3	4	5	

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Micrometer, brake drum	3	4	5	Including calibration equipment
ENGINE PERFORMANCE				
Analyzer, engine	1	1	1	Including scope (lab scope w/ignition display capability acceptable)
Analyzer, exhaust gas	1	1	1	4 or 5 gas
Carburetor tools, computer	1	1	1	
Cleaner, fuel injection	1	1	1	
Gauge set, carburetor plug & angle	1	1	1	
Gauge set, fuel injection pressure	1	1	1	W/adapters
Light, timing advance	3	4	5	
Probe, logic	3	4	5	
Pyrometer	1	1	1	
Scope, lab	1	1	1	Dual trace
System tester, battery/starter/charging	2	2	2	
Tester, cylinder leakage	1	1	1	
Tester, injector pulse	1	1	1	
ELECTRICAL/ELECTRONIC SYSTEMS				
Pick tool set, connector	1	1	1	
Service tool, alternator	1	1	1	
System tester, battery/starter/charging	3	4	5	

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: TRANSPORTATION, DISTRIBUTION, AND LOGISTICS
PATHWAY: FACILITY AND MOBILE EQUIPMENT MAINTENANCE
PROGRAM OF STUDY: AVIATION

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Overhead projector with screen	1	1	1	
Vacuum/pressure pump	1	1	1	
Aerodynamics demonstrator	1	1	1	
Multimeter	5	7	10	Digital
Electrical circuit trainer	1	1	1	
Drawing table	1	2	3	
Parallel bar	1	2	3	
Airframe mockup	1	1	1	
Scale	1	1	1	Including adapters & weights
Computer system	4	5	6	See Technology Standards
Computer printer	4	5	6	
Tool set, aircraft machine	1	1	1	
Wrench set, aircraft box	1	2	3	Metric, 0° offset, 12 pt., 6 mm-24 mm
Wrench set, aircraft box	1	2	3	Inches, 15° offset, 12 pt., ¼"-7/8"
Wrench set, aircraft box	1	2	3	Metric, 15° offset, 12 pt., 8 mm-20 mm
Drill bit set, aircraft	1	1	1	Aircraft length, 135° split pt., 1/8"-1/2"
Socket set, deep	1	1	1	Inches, ½" drive, ½"-15/16"
Socket set, shallow	1	2	3	Inches, ½" drive, ½"-15/16"
Socket set, shallow	1	2	3	Metric, ½" drive, 8 mm-20 mm
Mandrel set, tubing	1	2	3	
Tool set, flaring	1	1	1	
Pump, test	1	1	1	
Battery, aircraft	4	4	4	
Battery charging system	1	1	1	Aircraft
Tug, aircraft	1	1	1	Aircraft towing vehicle
Aircraft	1	1	1	Aircraft w/taxi capability

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS
PATHWAY: ENGINEERING AND TECHNOLOGY
PROGRAM OF STUDY: COMPUTER ENGINEERING
(Previously – Computer Systems Technology)

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Cabinet, storage	2	2	2	Locking, 36" W x 24" D x 72" H
Cable tester	1	1	1	Network circuit tester, data & voice communications test capability
Camcorder tripod	1	1	1	2'-5' collapsing, w/extension legs
Computer file server	1	1	1	Refer to current Technical & Professional Education Technology Standards
Computer JAZ drive	1	1	1	1 GB capacity JAZ disks
Computer modem	1	1	1	Refer to current Technical & Professional Education Technology Standards
Computer network hub	1	1	1	24 ports
Computer network hub	1	1	1	12 ports
Computer printer	1	2	2	
Computer printer	2	2	2	
Computer repair trainer	6	8	12	Microcomputer/PC trainer, compliant w/A+ certification standards
Computer scanner	1	1	1	
Computer system	6	6	6	See Technology Standards
Computer system, teacher's	1	1	1	See Technology Standards
Computer, laptop	1	1	1	See Technology Standards
Ladder	2	2	2	Stepladder, 10', fiberglass, nonconductive, Type 1A, 300-lb. workload
Ladder	2	2	2	Stepladder, 6', fiberglass, nonconductive, Type 1A, 300-lb workload

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Network diagnostic software	1	1	1	Capable of monitoring, analyzing, & diagnosing of network problems, Windows 95/98/2000 compliant
Network management software	1	1	1	For networking & managing classroom computer systems, Windows 95/98/2000 compliant
PC camera	2	2	2	Color, digital, 640 x 480 still picture resolution, 24 frames/sec at 160 x 120 resolution, including any required software
Tool kit, technician's	10	15	15	Comprehensive computer service hand tool kit
Tool kit, wiring	1	1	1	For coax cable, cable tester, center conductor trimmer, crimp frame, die sets, punch tools, stripper
Tool kit, wiring	1	1	1	For Category 5 cable, cable tester, crimp tool, round wire cutter/stripper
Uninterruptible power source (UPS)	1	1	1	Including software, Windows 95/98/2000 compliant, automatic voltage regulation, surge & noise suppression
Video camcorder	1	1	1	1/2" VHS, portable, w/battery pack & carrying case
Volt/ohm meter	2	4	6	Digital
Worktables	10	12	12	30" x 60", w/2 duplex outlets available

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: ARCHITECTURE AND CONSTRUCTION
PATHWAY: CONSTRUCTION
PROGRAM OF STUDY: CONSTRUCTION TECHNOLOGY

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	1	Portable, 2 hp, 30 gal., 110 v
Air compressor	1	1	1	Stationary, 5 hp, 220 v, 60 gal.
Airless paint sprayer	1	1	1	1 pt. or 1 qt. capacity, 110 v
Airless paint sprayer	1	1	1	5 gal. capacity, 110 v
Bench, work	6	7	8	36" x 48", 2 1/4" hardwood tops
Cart, hand	1	1	1	Brick
Computer system, teacher's	1	1	1	See Technology Standards
Computer printer	1	1	1	
Drill bit set	1	1	1	Wood, 1/4"-1"
Drill press	1	1	1	15", 1/2", 1/2 hp, 110 v, single-phase
Drill, cordless	1	2	3	Electric, 3/8", w/charger, pistol grip, heavy-duty, 2-speed, forward & reverse
Eyewash station	1	1	1	
Grinder, bench	1	1	1	6", 1/3 hp, 110 v, single-phase, 2-wheel
Ladder, extension	1	1	1	12'/24', aluminum
Ladder, step	1	1	1	10', heavy-duty, aluminum
Ladder, step	2	2	2	6', heavy-duty, fiberglass
Mortar box	1	1	1	15 cubic ft.
Nail gun, pneumatic	1	1	1	Box/common
Nail gun, pneumatic	1	2	3	Finish
Pop-rivet gun	1	1	1	Pneumatic
Router	1	2	3	1 1/2 hp, 22,000 rpm, 110 v
Router guide	1	1	1	For cabinet doors
Router, plastic laminate	1	1	1	Trimmer
Sander, belt	1	2	3	3" x 21", 110 v
Sander, belt/disk	1	1	1	Bench or pedestal type, 6" x 48" belt, 110 v
Sander, vibrating	2	4	6	Heavy-duty, 110 v

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Saw, band	1	1	1	15", 3/4 hp,110/220 v, single-phase
Saw, circular	2	2	2	7 1/4"
Saw, compound miter	1	1	2	1 1/2 hp, 5,000 rpm, 110 v
Saw, masonry	1	1	1	110/220 v, single-phase
Saw, panel or equivalent	1	1	1	Panel saw or equivalent guide table for table saw
Saw, saber	1	2	3	1" stroke, 110 v
Saw, scroll	1	1	1	15", 110 v
Saw, table	1	2	2	10" heavy-duty, tilt arbor, 3 hp, 110/220 v, single-phase
Saw, table	1	1	1	Contractor's, 10" tilt arbor, 1 1/2 hp, 110/220 v, single-phase
Scaffolding section	1 sec	1 sec	1 sec	8' height, low level, steel mason's
Scaffolding section	2 sec	2 sec	2 sec	Steel or aluminum, collapsing
Screwdriver, cordless	2	4	6	W/charger
Screw gun	2	2	2	Drywall type
Stapler, pneumatic	1	2	2	1 1/4"-1 1/2"
Stapler, pneumatic	1	2	2	1/4"-5/8"
Transit & tripod	1	1	1	Builder's
Transit & tripod	1	1	1	Laser
Vacuum cleaner, shop	1	2	3	5 gal., 110 v, wet/dry

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: LAW, PUBLIC SAFETY, AND SECURITY
PATHWAY: LAW ENFORCEMENT SERVICE
PROGRAM OF STUDY: CRIMINAL JUSTICE

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Belt, patrolman's	4	6	8	Nylon; including patrolman's flashlight, handcuffs, & red non-fiction plastic gun & carrier for each; carrier for walkie-talkie
Cabinet, storage	2	2	2	Locking, 36" W x 24" D x 72" H
Camcorder, digital	2	2	2	Still photo capability, digital zoom, time/date generator, (standard accessories – battery holder, battery, tripod base, microphone, viewfinder, carrying case)
Camcorder tripod	1	2	2	2'-5' collapsing, w/extension legs
Camera	1	1	1	35 mm, f2.5 lens, built-in flash
Camera lens kit	1	1	1	Lens kit for digital camera, wide-angle & close-up lens attachments
Camera telephoto lens	1	1	1	For 35 mm camera
Camera, digital	1	2	3	Resolution 3.0+ megapixels, computer interface or dock, 6x zoom, 8 Mb internal memory, rechargeable battery & charger
Casting kit	1	2	2	
Computer printer, ink-jet	4	6	8	
Computer printer, laser	1	1	1	
Computer scanner	1	1	1	
Computer system	4	6	8	See Technology Standards
Computer system, teacher's	1	1	1	See Technology Standards
Computer, notebook	1	1	1	See Technology Standards
Drafting parallel bar	2	2	2	36"
Drafting table	2	2	2	Drawing surface 24" x 36" minimum
Fingerprint kit	1	1	1	Master
Metal detector	1	1	1	Hand-held
Microscope	2	2	2	Magnification 100x-300x, fluorescent lighting
Microscope	1	1	1	Computer interface, magnification 100x-300x,

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Microscope, stereoscopic	2	3	4	Magnification 40x total, fluorescent lighting
Patrol car	1	1	1	Retired police cruiser
Photo editing software	4	6	8	Photoshop, Photo Editor, or equal; digital imaging & editing
Radio training system	1	1	1	To mimic police dispatch console, microphone, recorder, etc.
Telephone trainer	1	1	1	Including tape recorder
Video camcorder	1	1	1	1/2" VHS, portable w/battery pack & carrying case
Video monitor or television	1	1	1	36" color, large screen
Walkie-talkie	4	6	8	Police, channel selector, w/shoulder microphone

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS
PATHWAY: ENGINEERING AND TECHNOLOGY
PROGRAM OF STUDY: DRAFTING AND DESIGN

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Blueprint storage cabinet	1	1	1	24" x 36" capacity
Computer	15	20	25	See Technology Standards
Computer plotter	1	1	1	Contact State Office for Standards
Computer pointing device teacher's	1	1	1	
Computer pointing device	15	20	25	
Computer printer	2	2	3	
Computer scanner	1	1	2	
Computer, teacher's	1	1	1	See Technology Standards
Drafting chair	15	20	25	Adjustable height & back
Instructor's drawing table	1	1	1	30" x 42" drawing surface, adjustable height & tilt, vinyl board cover, 24" x 60" office desk
Instructor's drawing chair	1	1	1	Adjustable height & back
Machinist measuring instrument set	2	2	2	1" micrometer, 6" vernier gauge, combination square, 6" machinist scale
Plot server	1	1	1	Contact State Office for Standards
Computer workstation	15	20	25	Contact State Office for Standards
CAD software, student	15	20	25	Contact State Office for Standards
CAD software, teacher	1	1	1	Current release of AutoCAD, AutoCAD Mechanical, or Architectural Desktop
Architectural Graphic Standards Reference	1	1	1	

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

EXPLORING INDUSTRIAL TECHNOLOGY EDUCATION

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
COMMUNICATIONS – COMPUTER-AIDED DESIGN				
CAD software	2	2	2	CAD software, AutoCAD 2000 LT
Computer system	2	2	2	See Technology Standards
Computer printer, ink-jet	1	1	1	
COMMUNICATIONS – VIDEO PRODUCTION				
Audio cassette player/recorder	1	1	1	Interfacing w/VCR player/recorder & video mixer listed
Audio compact disk player	1	1	1	Stereo
Headphone	2	2	2	Stereo
Microphone	2	2	2	Interfacing w/audio cassette player/recorder & video mixer listed
Tripod, camcorder	1	1	1	2'-5' collapsing, w/extension legs
VCR player/recorder	2	2	2	1/2" VHS, w/external connections for video camera & monitor
Video camcorder	1	1	1	1/2" VHS, portable w/battery pack & carrying case
Video editing processor	1	1	1	Interfacing w/VCR listed
Video monitor	2	2	2	19" color, cable-ready
COMMUNICATIONS – RADIO PRODUCTION				
Audio amplifier	1	1	1	Stereo
Audio cassette player/recorder	1	1	1	Stereo, dual cassette
Audio compact disk player	1	1	1	Stereo
Audio mixer	1	1	1	Stereo
Headphones	2	2	2	Stereo
Microphone	2	2	2	
Speaker system	2	2	2	Modular speaker systems w/bass & treble speakers

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
COMMUNICATIONS – DESKTOP PUBLISHING & COMPUTER GRAPHICS				
Computer system	2	2	2	See Technology Standards – Level I
Computer printer, ink-jet	1	1	1	
Computer scanner	1	1	1	
Copier	1	1	1	
Desktop publishing software	2	2	2	Adobe Pagemaker
CONSTRUCTION – ARCHITECTURAL DESIGN				
CAD software	2	2	2	AutoCAD 2000 LT
Computer system	2	2	2	See Technology Standards
Computer printer, ink-jet	1	1	1	
CONSTRUCTION – MATERIALS TESTING & ANALYSIS				
Pressure/strength tester	1	1	1	Hydraulic, pneumatic, or mechanical destructive pressure test stand that can measure weight or pressure applied
CONSTRUCTION – STRUCTURAL SYSTEMS				
Pressure/strength tester	1	1	1	Hydraulic, pneumatic, or mechanical destructive pressure test stand that can measure weight or pressure applied
CONSTRUCTION – SURVEYING				
Survey rod & target	1	1	1	9'6" wood or metal, feet & 10ths divisions
Transit level	1	1	1	20x scope, w/carrying case
Transit tripod	1	1	1	Wide frame, extension leg, w/head to fit transit level above
ENERGY, POWER, & TRANSPORTATION – AUTOMOTIVE DESIGN				
Band saw, jigsaw, or scroll saw	1	1	1	10" bench model
Belt/disk sander	1	1	1	1/2 hp, 1" x 42" belt, 8" disk
Drill	1	1	1	Electric, 1/4" drive, variable speed, reversing
Drill press	1	1	1	8" bench model
Racing gate	1	1	1	Start/finish gates for CO_2 racer, w/firing pin & housing
Rotary modeling tool	2	2	2	W/various bits for modeling w/wood
Spray booth	1	1	1	Tabletop, with or without exhaust
Vise	2	2	2	Tabletop, woodworker's vise or equivalent

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
ENERGY, POWER, & TRANSPORTATION – INTERNAL COMBUSTION ENGINE REPAIR				
Buffer/grinder	1	1	1	6", 1/3 hp, dual wheel, wire brush, bench model
Drill	1	1	1	Electric, 1/4" drive, variable speed, reversing
Gasoline engine	6 (1 per period)	6 (1 per period)	6 (1per period)	2.0+ hp, single cylinder, 4-stroke cycle, horizontal or vertical shaft
ENERGY, POWER, & TRANSPORTATION – FLIGHT SIMULATOR & ROCKET DESIGN				
Computer	2	2	2	Contact state office for standards
ENERGY, POWER & TRANSPORTATION – ELECTRONICS				
Electronics trainer	1	1	1	Basic electronic systems desktop electronics trainer
MANUAFACTURING – ROBOTICS				
Robotic work cell	1	1	1	Robotic work cell w/conveyors, optic sensors, programmer, microswitches, student workbooks
MANUFACTURING – PNEUMATICS				
Pneumatics trainer	1	1	1	Desktop pneumatics trainer
MANUFACTURING – WELDING				
Welding simulator	1	1	1	Desktop Welding Simulator
MANUFACTURING – COMPUTER-AIDED MANUFACTURING				
CAD software	1	1	1	AutoCAD 2000 LT
CAD/CAM software	1	1	1	Compatible w/CNC mill or lathe above
CNC mill or lathe	1	1	1	Vertical mill or lathe, bench top
Computer system	1	1	1	See Technology Standards
Computer printer, ink-jet	1	1	1	

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: MANUFACTURING
PATHWAY: MAINTENANCE, INSTALLATION, AND REPAIR
PROGRAM OF STUDY: ELECTRONICS

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Computer printer	1	1	1	
Computer system, teacher's	1	1	1	See Technology Standards
Function generator	10	12	15	2 MHz, TTL/CMOS pulse outputs
Lamp, magnifying	1	1	1	
Multimeter	10	12	15	Digital
Oscilloscope	10	12	15	20 MHz, dual trace
Tap & die set	1	1	1	Standard & metric
Tool set, alignment	1	1	1	Nonconductive
Tool set, electronics	1	1	1	Professional
Tool set, electronics	10	12	15	Technician's tool kit, student
Trainer, electronics	10	12	15	Including breadboard & components
Vacuum cleaner	1	1	1	Small, hand-held, w/attachments
Workbench	10	12	15	4-15 A outlets w/circuit breaker

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: MANUFACTURING
PATHWAY: PRODUCTION
PROGRAM OF STUDY: FURNITURE MANUFACTURING

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	1	Portable, 2 hp, 110 v, 30 gal.
Air compressor	1	1	1	Stationary, 5 hp, 60 gal., 220 v
Biscuit joiner	1	1	1	Hand-held or table model, 110 v
Computer system, teacher's	1	1	1	See Technology Standards
Computer printer	1	1	1	
Drill bit set	2	3	4	Wood, 1/4"-1"
Drill press	1	2	2	15", 1/2", 1/2 hp, 110 v, single-phase
Drill, electric	3	4	5	Cordless, 3/8", pistol grip, heavy-duty, 2-duty, 2-speed, forward & reverse, 110 v, w/charger
Eyewash station	1	1	1	
Guide, router	2	2	2	For cabinet doors
Jointer	1	1	1	8", 3/4 hp, 110/220 v, single-phase
Ladder, step	1	2	2	6', heavy-duty, fiberglass
Ladder, step	1	2	2	8', heavy-duty, aluminum
Nail gun, finish	2	3	4	Pneumatic
Spray gun, airless	2	2	2	1 pt. or 1 qt. capacity, 110 v
Router	2	3	4	1 1/2 hp, 22,000 rpm, 110 v, heavy-duty
Router, plastic laminate	2	2	2	110 v, trimmer
Sander, belt	1	1	2	3" x 21", electric, 110 v
Sander, belt/disk	1	1	2	Bench or pedestal, 6" x 48" belt, 8" disk, 110 v
Sander, vibrating	4	6	8	Heavy-duty, 110 v
Saw, band	1	1	1	15", 3/4 hp, 110/220 v, single-phase
Saw, compound miter	1	2	2	1 1/2 hp, 5,000 rpm, 110 v
Saw, panel or equivalent	1	1	1	Panel saw or equivalent guide table for table saw

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Saw, saber	2	2	2	1" stroke, 110 v
Saw, scroll	1	2	2	15", 110 v
Saw, table	2	2	2	10" heavy-duty, tilt arbor, 3 hp, 110/220 v, single-phase
Shaper w/bit set	1	1	1	110/220 v, single-phase
Stapler, pneumatic	2	3	4	1 1/4" staples
Stapler, pneumatic	2	3	4	1/4"-5/8" staples
Table, glue clamping	1	1	1	48" length
Workbench	6	10	12	36" x 48", 2 1/4" hardwood tops

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

GATEWAY TO TECHNOLOGY

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15	Count 20	Count 25	Description/Specification {Indicates PLTW Description}
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
Breadboard trainer, electronic	13	13	13	{Briefcase Martek XK-700}
Camera, digital	1	1	1	Still pictures only {Sony, MVC-FD75} – or still pictures & movie clips {Sony, MVC-FD97}
Compressor, portable	1	1	1	{500027}
Computer system	26	26	26	See Technology Standards
Computer hub, ethernet	2	2	2	3 COM 16 port 10-BT, 16 connections
Computer printer	1	1	1	
Computer, laptop (teacher's)	1	1	1	See Technology Standards
Computer toner cartridge	1	1	1	
Extension unit with power supply	5	5	5	{Fishertechniks Extension (slave) unit w/power supply}
Gateway to Technology kit	7	7	7	{Fishertechniks} See detailed specs in PLTW purchasing manual
Gateway to Technology software bundle (1st Year)	1	1	1	{Inventor 5.3, Circuit Maker, Mastercam, Eshed Robotic Robocell}
Laser beam trainer	7	7	7	{Kelvin 840874}
Photo editing software	1	1	1	{Adobe Photoshop 6.0}
Projector, LCD	1	1	1	1,300 lumens, 800 x 600 SVGA, 1,080 x 720 XGA {Infocus LP 340} – or 800 lumens, 1,024 x 768 XGA, SXGA-compatible {LIGHTWARE LX*}
Racing platform track	1	1	1	{840957}
Racing 8-foot track	2	2	2	{840445}
Serial interface	5	5	5	{Fishertechniks serial interface w/power supply}
Stroboscope/tachometer	1	1	1	{Digital Carolina Biological Supply D75-1425}
Table	10	10	10	High-pressure laminate top, 30" x 60" {Virco 8774}
Table, folding	10	10	10	High-pressure laminate top, 30" x 96" {Virco 62308}
Wind turbine	1	1	1	{840955}
Workstation, computer	13	13	13	Computer (2 students), 30" x 60" {Virco 84265}

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS
PATHWAY: ENGINEERING AND TECHNOLOGY
PROGRAM OF STUDY: GEOSPATIAL TECHNOLOGY
(Formerly – Geographic Information Systems)

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
EQUIPMENT/SOFTWARE FOR GEOGRAPHIC INFORMATION SYSTEMS (Year 1)				
Television/VCR/DVD	1	1	1	25"
Overhead projector with pcreen	1	1	1	
A-V cart/media storage center	1	1	1	
3-D software	1	1	1	
Arcview Schools & Lib Pkg (software)	1	1	1	
Computer page scanner	1	1	1	11" x 14" scan area, see current SpaceStars Equipment Standards
Computer printer	1	1	1	Color, networkable, legal/letter sheet, 128/256 Mb RAM, 1,200 DPI resolution (photo mode)
Computer server, switch, & network	1	1	1	Contact state office for SpaceStars Equipment Standards
Computer system, teacher's	1	1	1	GIS/RS workstation & monitor, contact state office for SpaceStars Equipment Standards
Computer system, student's	15	20	25	GIS/RS workstation & monitor, contact state office for SpaceStars Equipment Standards
GEODESY, GIS Data, Air Photo, Landsat 7, including satellite tool kit (software)	1	1	1	School license for GIS software & data
GPS units	5	7	10	Contact state office for SpaceStars Equipment Standards
Image analysis software	1	1	1	
Microsoft Office (software)	1	1	1	Classroom site license
Network analysis software	1	1	1	
Spatial analysis software	1	1	1	
LCD projector	1	1	1	Contact state office for SpaceStars Equipment Standards
EQUIPMENT/SOFTWARE FOR GEOGRAPHIC INFORMATION SYSTEMS (Years 2 & 3)				
High-resolution multi-spectral data set (software)	1	1	1	For use in Year 2 Spatial technology & remote sensing
High-resolution multi-spectral data set (software)	1	1	1	For use in Year 2 Spatial projects & community exchange

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
ESSENTIAL TOOLS AND SUPPLIES (Essential tools and supplies are items such as hand tools, small power tools, test instruments, etc., considered necessary for instruction in the program but that cost less than $100 or are not eligible for reimbursement by the grant.)				
Network installation	1	1	1	Installation & configuration of computer network, GIS software, etc.
SpaceStars station kit (Semester 1)	15	20	25	
Student kit (Year 2)	15	20	25	1 per student
Student kit (Year 3)	15	20	25	1 per student
Teacher resource pack (Year 2)	1	1	1	Curriculum/instructional materials
Teacher resource pack (Year 3)	1	1	1	Curriculum/instructional materials
Teacher resource pack (Semester 1)	1	1	1	Curriculum/instructional materials
Teacher resource pack (Semester 2)	1	1	1	Curriculum/instructional materials

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: ARCHITECTURE AND CONSTRUCTION
PATHWAY: CONSTRUCTION
PROGRAM OF STUDY: HVACR

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air acetylene torch	2	2	2	
Air compressor	1	1	1	5 hp, 60 gal.
Amp & voltage recorder	2	2	2	Digital
Bench, work	2	2	2	Electrical, 4-15 A outlets w/circuit breaker
Bench, work	4	5	6	30" x 60", wood or metal
Charging cylinder	3	3	3	Heated
Charging meter	1	1	1	Electronic
Cooling unit	1	1	1	Window unit
Combustion testing kit	1	1	1	
Computer System	1	1	1	See Technology Standards
Computer Printer	1	1	1	
Cutter Set, Knock-Out	1	1	1	
Drill, Electric	2	3	4	3/8" drive, variable speed, reversing
Drill, Electric	2	3	4	Cordless, 3/8" Drive, variable speed, reversing
Drill, Electric	1	1	1	Right angle, 3/8" drive, variable speed, reversing
Gauge Set, Refrigeration	3	3	3	
Grinder, Bench	2	2	2	6", dual wheel
Hand Truck, Appliance	2	2	2	With tie strap
Heating/Cooling Unit	1	1	1	Furnace/condenser system
Heating/Cooling Unit	1	1	1	Heat pump system
Heating/Cooling Unit	1	1	1	Window unit
Hermetic Analyzer	2	2	2	
Hermetic Service Valve Kit	2	2	2	
Leak Detector	2	2	2	Electronic
Notcher	1	2	3	Hand
Pilot Tube	2	2	2	
Puller Set	1	2	3	Bearing

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Puller set	1	2	3	Gear
Regulator, nitrogen	1	1	1	W/nitrogen bottle & cart
Tap & die set	1	1	1	Standard & metric
Threading tool	3	3	3	T-handle tap wrench
Threading tool, die	2	2	2	
Threading tool, die stock	2	2	2	
Tubing bender	3	4	5	Lever
Tubing swage punch	2	2	2	
Vacuum gauge	2	2	2	Thermistor
Vacuum pump	2	2	2	2-stage, 20 micron
Welder, MIG	1	1	1	Portable, 90 amp, 115 v
Welder, portable	2	2	2	Oxyacetylene unit (complete welding outfit w/cutting torch attachments, bottles, & cylinder truck)
Wrench, impact	2	2	2	Electric

TECHNICAL AND PROFESSIONAL EDUCATION

INDUSTRIAL COOPERATIVE TRAINING

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Computer system	3	4	5	See Technology Standards
Computer printer	3	4	5	
Tape recorder, cassette	1	1	1	Stereo w/headphones
Television/VCR/DVD	1	1	1	25"

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: MANUFACTURING
PATHWAY: MAINTENANCE, INSTALLATION, AND REPAIR
PROGRAM OF STUDY: INDUSTRIAL EQUIPMENT MAINTENANCE

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	1	5 hp, w/80-gal. tank
Air regulators	2	2	2	Water and/or oil extractors
CAD software	1	2	3	AutoCAD LT or Inventor
Computer system, teacher's	1	2	3	See Technology Standards
Computer printer	1	2	3	
Dial indicator	1	1	1	
Drill press	1	2	3	Including attachments, 20" capacity
Drill, electric	2	3	4	3/8" reversible, variable speed
Drill, electric	2	3	4	1/2" reversible, variable speed
Exhaust system, smoke	1	1	1	
File set	1	2	3	Assorted
Grinder, bench	1	1	2	Dual wheel, 6"
Grinder, electric	1	2	3	Hand-held, 7"
Hydraulic system trainer	1	2	3	
Iron worker, hydraulic	1	1	1	50-ton, up to 1/2" x 10" cut
Jack, hydraulic	1	1	1	10-ton
Jack, hydraulic	2	2	2	5-ton
Lathe, bench	2	3	4	12" minimum length, w/attachments
Level, precision	1	1	1	
Mandrel set	1	2	3	Lathe
Milling machine, vertical	1	2	3	Including attachments
Multimeter	2	3	4	Digital
Welder, oxyacetylene	1	1	1	
Saw, band	1	1	1	Horizontal, metal, 7" capacity
Saw, band	1	1	1	Vertical, metal, 20" capacity
Saw, circular	1	1	1	7 1/4"
Saw, table	1	1	1	10", 1 1/2 hp
Square, machinist	1	2	3	Combination w/attachment set

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Surface plate	1	1	1	
Tables, work	5	6	7	Steel
Tap & die	1 set	1 set	1 set	Standard & metric, 1/2"-1 1/2"
Welder	2	2	2	AC/DC arc, 200 amp
Welder	1	1	1	MIG/TIG, 200 amp
Welder	1	1	1	MIG, portable, 90 amp, 115 v

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: MANUFACTURING
PATHWAY: PRODUCTION
PROGRAM OF STUDY: MACHINE TOOL TECHNOLOGY

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	1	115 v, 3 hp, 60-gal. tank
Air regulators	1	1	1	Water & oil separator
Arbor press	1	1	1	Hydraulic, 50-ton
CAD software	1	2	3	AutoCAD LT or Inventor
Collet sets	3	4	5	1/4"-1"
Computer system, teacher's	1	2	3	See Technology Standards
Computer printer	1	2	3	
Dial caliper	2	3	4	6"
Digital readout	2	3	4	For vertical milling machine
Drill press, bench	1	1	2	8", variable speed, 1/3 hp, w/attachments
Drill press, floor	1	1	2	20", variable speed, 1 1/2 hp, w/attachments
Drill, electric	1	2	3	1/2" drive, reversible, variable speed
Drill, electric	1	2	3	3/8" drive reversible, variable speed
End mill sets	3	3	3	1/4-1"
Gauge set, radius	1	1	1	
Gauge, height	1	1	1	
Grinder	1	1	1	Surface, 220 v, 1 hp, 6" x 18", magnetic chuck, automatic feed, w/attachments
Grinder, bench	1	1	1	7", 115 v, 1/2 hp
Grinder, carbide	1	1	1	115 v, 1/2 hp
Grinder, electric	1	2	3	7", hand-held
Grinder, pedestal/bench	1	1	1	10", 1 hp
Grinder, tool & cutter	1	1	1	1/2 hp
Grinder, tool post	1	1	1	115 v, 1/4 hp
Hardness tester	1	1	1	
Indexing head	1	1	1	For vertical milling machine
Lathe, bench	2	3	4	1 1/2 hp, 9" x 20" w/attachments
Lathe, gap bed	1	1	1	1 1/2 hp, 9" x 20" w/attachments

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Mandrels set	3	4	5	Lathe
Micrometer	2	3	4	1"-2"
Micrometer	2	3	4	2"-3"
Micrometer	1	2	3	3"-4"
Micrometer	1	2	3	Digital, 0-1", .0001" accuracy
Milling machine, vertical	1	2	3	8" x 30", variable speed 3 axis, 1 1/2 hp, w/attachments
Milling machine, vertical	1	1	1	9" x 42", variable speed, 3 axis, 3 hp power feed, w/attachments
Parallel set	2	3	4	For vertical milling machine
Reamer set	1	2	3	
Rotary table	1	1	1	For vertical milling machine
Sander	1	2	3	Belt & disk, 6" belt, 12" disk, 1 1/2 hp
Saw, band	1	1	1	Horizontal, 1/2 hp, 1" blade capacity, 3-speed, coolant system
Saw, band	1	1	1	Vertical, 2 hp, variable speed, w/blade welder
Surface plate	1	1	1	20" x 30", granite
Tap & die set	1	1	1	Standard ¼"-1/2" & 3 mm-12 mm
Vise	2	2	2	Drill press, angle adjustable
Vise	6	7	8	Machinist, 4"
Workbench	6	7	8	Steel, 30" x 60"
Wrench set	1	2	3	Standard & metric, 5/16"-1 1/16"

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: MANUFACTURING
PATHWAY: MAINTENANCE, INSTALLATION, AND REPAIR
PROGRAM OF STUDY: MAJOR APPLIANCE REPAIR

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	2	2 hp, 30-gal. tank
Analyzer, hermetic	1	1	1	Multiphase
Cart, work	4	5	6	Roll around
Cleaning tank, parts	1	1	1	Nonsolvent-based cleanser suggested
Computer system, teacher's	1	1	1	See Technology Standards
Computer printer	1	1	1	
Drill press	1	1	2	Bench, 12"
Flipper, appliance	2	2	2	
Gauge & manifold, refrigeration	1	1	1	For HFC-134a
Gauge & manifold, refrigeration	1	1	1	For R-12
Gauge & manifold, refrigeration	1	1	1	For R-410
Grinder, bench	1	1	2	1/4 hp w/wire brush
Leak detector	2	2	2	Combustible gas, electronic
Leak detector	2	2	2	Halogen, electronic
Multimeter, digital	4	5	6	
Puller set	1	1	1	
Recovery cylinder	3	3	3	Refrigerant (1 ea. R-12, HFC-134a, R-410)
Recovery system, refrigerant	1	1	1	Multiple refrigerants
Table, metal	4	5	6	30" x 5'
Tap & die set	1	1	1	Standard & metric
Tool set, automatic washer	3	4	5	1 set per major manufacturer
Tool set, service valve	1	2	3	
Vacuum gauge	1	1	2	Vacuum to 50 microns
Vacuum pump	1	1	2	2-sage, 1/2 hp, 5 cu. ft./min.
Vise, bench	2	3	4	4" jaws
Vise, drill press	1	1	2	Angle adjustable

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Vise, machinist	1	1	2	4 1/2" metal jaw
Welder, portable	1	1	1	Oxyacetylene unit (complete welding outfit w/cutting torch attachments, bottles, & cylinder truck)
Wrench set, open end	2	2	3	Standard & metric, 1/4"-1"; 7 mm-15 mm
Wrench set, socket	2	2	3	Standard & metric, 1/4" drive, 3/16"-1/2", 6 pt.; 5 mm-13 mm, standard & deep well
Wrench set, socket	2	2	3	Standard & metric, 3/8" drive, 3/8"-13/16", 5 mm-13 mm, standard & deep well
Wrench, air ratchet	1	2	3	3/8" drive

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: HEALTH SCIENCE
PATHWAY: THERAPEUTIC SERVICES
PATHWAY: HEALTH INFORMATICS
PROGRAM OF STUDY: MEDICAL PROFESSIONS EDUCATION

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
AED automated ext. defibrillator	1	1	1	Trainer w/voice & screen prompts/electrodes
Anatomical chart	1 set	1 set	1 set	Charts, markable, detailed illustration
Anatomical model set	1 set	1 set	1 set	
1 – Ear				Enlarged 3 times, dissectible in 6 parts, unbreakable plastic
1 – Eye				Enlarged 6 times, dissectible, unbreakable plastic
1 – Teeth				Teeth & jaw, 4-part series, cross-section, unbreakable plastic
1 – Skin				Enlarged 105 Times, cross-section, mounted
1 – Heart				Realistic, palpable, dissectible, unbreakable plastic
1 – Brain				Twice life size, mounted
Anatomical torso	1	1	1	Full sized, detachable parts, mounted, unbreakable plastic
Beds, hospital	2	2	2	Full spring, enameled steel, 6-button control, emergency crank, 80" x 35" mattress, spring-loaded adjustable side rails
Basic examination & surgical equipment	1 set	2 sets	3 sets	
1 – Tuning fork				Stainless steel
1 – Laryngeal mirrors				Aluminum-magnesium alloy w/weights
2 – Percussion hammers				Triangle bomber red rubber, chrome-plated handle
1 – Nasal speculum				Stainless steel
Blood pressure cuff	5	10	15	Mercury, aluminum case, adult calibrated V-Lok inflation, 260 mm Hg scale
Cabinet & stand, TV/VCR	1	1	1	On casters
Cart, utility	1	2	3	Welded steel, ball bearing casters, rubber wheels, T-shelves, 1 drawer
Chart holders	2	4	4	Spring-loaded or 3-ring binder
Hospital linen set	3 sets	6 sets	10 sets	
4 – Bedspreads				Cotton/polyester, 72" x 90"
4 – Draw sheets				45" x 72"
4 – Flat sheets				50/50 cotton/polyester, hospital grade
2 – Mattress pads				Quilted, cotton/poly fabric
2 – Mattress pads				Heavy-gauge vinyl

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
3 bx exam gloves				Latex-free
1 set bath towels (1 dz)				Cotton, 20" x 40"
1 set washcloths (1 dz)				Cotton, 12" x 12"
Manikin, adult CPR	2	2	2	Full body, face removable, disposable airway, electronic monitor, print out, carry case, cleaning kit
Manikin, infant CPR	2	2	2	Removable face, airway, brachial pulse simulator, movable jaw, indicator (monitor)
Media storage center	1	1	1	Components for films, VCR tapes, filmstrips
Microscopes	2	3	4	45 mm DIN objectives, 4x, 10x, 40" x 19", viewing tube mounted on rotating head, 20-watt illumination, oil immersion lens, low/high powered
Opthalmoscope	1	1	1	Medium size handles, rechargeable batteries
Otoscope	1	1	1	Handle w/batteries, reusable specula
Patient-assist equipment set	1 set	2 sets	3 sets	
1 – Walker				1" aluminum tubing, folding, adjustable, nonskid, rubber tips
1 – Walking cane				Adjustable, 1" anodized aluminum, double locked, non-skid tip, cushioned handle
1 – Pair regular crutches				Laminated hardwood, adjustable, w/crutch hand
1 – Pair forearm crutches				Grip, underarm pads, nonskid rubber tips
10 – Isolation kits				Disposable
Projector stand	1	1	1	Multiheight
Scales, adult weight	1	2	2	Physician's balanced die cast beam, heavy-duty base & lower system
Scales, pediatric weight	1	2	2	Chrome-plated balance beam, enameled steel tray w/protective edges, 30-lb. capacity
Skeleton, deluxe model	1	1	1	Full sized, joints movable, heavy-duty plastic, dust cover
Tables, multipurpose classroom	5	6	7	Wood or metal (folding is OK), w/slide lock, 36" x 72"
Vital signs instrument set	1 set	2 sets	3 sets	
3 – Thermometer, electronic				Electronic, digital, visual & audio
10 – Thermometers, oral				Mercury/glass
10 – Stethoscope, student				Dual-head chest piece
10 – Blood pressure cuff				Calibrated V-Lok calibration & infiltration, cuff & bag
1 – Stethoscope, teaching				Dual-head chest piece, double set of binaural

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Wheelchair	1	2	2	Fixed arm rest, elevating leg rest, all steel, heavy-duty wheels

Classroom Equipment:

Item Name	Count	Description/Specification
Teacher desk & chair	1	
Student chairs	25	
Student desks	25	
File cabinet	1	
Television/VCR	1	
Overhead projector with screen	1	
A-V cart/media storage center	1	
Marker board/bulletin board	1	
Bookcases	2	
Computer table	4	
Computer chair	4	
Computer, desktop	4	See Technology Standards
Computer system, teacher's	2	See Technology Standards
Computer printer	2	

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: TRANSPORATION, DISTRIBUTION, AND LOGISTICS
PATHWAY: FACILITY AND MOBILE EQUIPMENT MAINTENANCE
PROGRAM OF STUDY: POWER EQUIPMENT TECHNOLOGY

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	1	2 hp, 30-gal. tank
Computer system, teacher's	1	1	1	See Technology Standards – Level I
Computer printer	1	1	1	
Engine, Briggs & Stratton	2	2	2	3.5 hp, 4-cycle, current model
Engine, Briggs & Stratton	2	2	2	3.5 hp, quantum, current model
Engine, Kohler	2	2	2	3.5 hp, 4-cycle
Engine, Tecumseh	2	2	2	3.5 hp, 4-cycle
Engine, Tecumseh	2	2	2	3.5 hp, 2-cycle
Grinder	1	1	2	6", 2-wheel w/wire brush
Metal tables, work	4	6	8	30" x 6'
Micrometers	1 set	1 set	1 set	Assorted, 0-1" to 3"-4"
Parts cleaning sink	1	1	2	Chemical w/pump
Press, arbor	1	1	1	
Tachometer	1	1	2	Electronic
Tap & die set	1	1	1	Standard & metric
Test stand	5	5	5	Small engine
Valve seat repair set	3	3	3	One valve seat repair set for each major brand taught
Vise, bench	4	5	6	4 1/2" metal jaw
Welder, arc	1	1	1	200 amp
Welder, portable	1	1	1	Oxyacetylene unit (complete welding outfit w/cutting torch attachments, bottles, & cylinder truck)
Wrench, air ratchet	2	3	4	3/8" drive

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

PRE-ENGINEERING TECHNOLOGY

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification {Indicates PLTW Description}
Television/VCR/DVD	1	1	1	25"
Overhead projector with screen	1	1	1	
A-V cart/media storage center	1	1	1	
INTRODUCTION TO ENGINEERING DESIGN				
Computer, laptop (teacher's)	1	1	1	Pentium 4, 4.2 GHz, Windows XP Pro, see detailed specs in PLTW purchasing manual (*compatible with Autodesk Inventor 8 & Windows XP Pro software)
Computer, student	15	20	25	Pentium 4, 4.2 GHz, Windows XP Pro, see detailed specs in PLTW purchasing manual (*compatible with Autodesk Inventor 8 & Windows XP Pro software)
Computer hub, ethernet	2	2	2	3 COM 16 port 10-BT, 16 connections
Computer printer	1	1	2	{HP LaserJet 5000N}
Computer printer	1	1	1	42" print width, 96 Mb memory, ethernet adapter, & 1EEE-1284 A-B cable {HP Design Jet 800}
Toner cartridge, printer	1	1	2	{For HP LaserJet 5000N printer}
Projector, LCD	1	1	1	1,100 lumens, 1,024 x 768 XGA, see detailed specs in PLTW purchasing manual {Infocus LP }
Workstation, computer	8	10	15	Computer (2 students), 30" x 60", w/adjustable height {Virco 8774}
Caliper, dial	15	20	25	6" {Starrett}
Table	8	10	15	High-pressure laminate top, 30" x 60", w/adjustable height {Virco 8774}
Table, folding	8	10	15	High-pressure laminate top, 30" x 96" {Virco 62308}
PLTW software bundle (1st Year)	1	1	1	{Inventor 8, Circuit Maker}
DIGITAL ELECTRONICS				
Breadboard trainer, Electronic	13	13	13	{Briefcase Martek XK-700}

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification {Indicates PLTW Description}
Integrated circuit kit	2	2	2	See detailed specs in PLTW purchasing manual
Programmer	1	1	1	Windows-based {EMP-11 PLD}
Oscilloscope	1	1	1	20 MHz, dual trace {Kelvin KBL 740085}
PRINCIPLES OF ENGINEERING				
Pneumatic trainer	1	1	1	{Discovery I w/t CAI software Shortess-Rawson # D1000}
Hydraulic trainer	1	1	1	{Discovery II w/t CAI software Shortess-Rawson # D2000}
Mechanisms trainer	1	1	1	{Discovery III w/t CAI software Shortess-Rawson # D3000}
Principles of Engineering kit	4	4	5	See detailed specs in PLTW purchasing manual {Fischertechnik kit, PLTW-POE}
Structural stress analyzer	1	1	1	Complete w/safety enclosure, Windows-based software & OS
Adapter set, structural stress analyzer	1	1	1	Tensile tester & top-loading adapter for structural stress analyzer
Extension unit with power supply	5	5	8	{Fishertechniks Extension (slave) unit w/power supply}
Serial interface	5	5	8	{Fishertechniks serial interfaces w/power supply}
Miniprocessor	1	1	1	Portable {Digimatic DP-1HS}
COMPUTER-INTEGRATED MANUFACTURING				
Automated manufacturing package	1	1	1	Automated manufacturing package, see detailed specs in PLTW purchasing manual
Serial interface	5	5	8	{Fishertechniks serial interfaces w/power supply}
Slave unit with power supply	5	5	8	{Fishertechniks extension slave unit w/power supply}
Principles of Engineering kit	4	4	4	See detailed specs in PLTW purchasing manual {Fischertechnik kit, *PLTW-CIM}
Workbench	2	2	2	Multipurpose, 30" x 60", 3/4" maple top, heavy metal legs {PP63-2908}
Cabinet	1	1	1	9-drawer, roller base, 26" x 12" x 19" {PP19-1196}
CIM software bundle	1	1	1	Site license, 25 seats, (Eshed Robotic Robocell, CNC Motion, Edge CAM)

Career & Technical Education

TECHNICAL AND PROFESSIONAL EDUCATION

CLUSTER: ARCHITECTURE AND CONSTRUCTION
PATHWAY: CONSTRUCTION
PROGRAM OF STUDY: WELDING

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Television/VCR/DVD	1	1	1	25"
Overhead projector w/screen	1	1	1	
A-V cart/media storage center	1	1	1	
LCD projector	1	1	1	
Air compressor	1	1	1	5 hp, 80-gal. tank
Air compressor	2	2	2	Portable, 3 hp, 20-gal. tank
Air regulators	2	2	2	Including water and/or oil extractors
Band saw, horizontal	1	1	1	Metal, 7" capacity minimum, 1 hp
Band saw, vertical	1	1	1	Metal, 14" capacity minimum, 1 hp
Computer system, teacher's	1	1	1	See Technology Standards
Computer printer	1	1	1	
Cutting machine	1	1	1	Traveling, track type, oxyacetylene
Drill press	1	1	1	Including attachments, 15"
Drill, electric	1	2	3	1/2" drive, variable speed, reversible
Drill, electric	1	2	3	3/8" drive, variable speed, reversible
Exhaust system	1	1	1	Suitable for exhausting welding gases
Grinder	2	3	4	Bench or pedestal, 10", 1 hp
Grinder	1	1	1	Bench, 6", dual-wheel
Grinder	2	1	1	Electric, hand-held, 7"
Guide bend tester	1	1	1	
Hoist	1	1	1	1-ton, hand, chain or electric
Jack, floor	1	1	1	2-ton, hydraulic
Oven, electrode	1	1	1	
Puller set	1	1	1	Bearing, wheel, & gear
Quenching tank	1	1	1	
Saw, cut-off	1	1	1	Abrasive, 10", 1 hp
Shear	1	1	1	Squaring, 32", $6,500
Tap & die set	1	1	1	Standard & metric to ½"
Welder, arc	10	12	12	300 amp, w/attachments
Welder, MIG	3	3	3	200 amp, w/attachments
Welder, portable	2	2	2	Oxyacetylene welding unit (complete w/cutting torch, bottles, attachments, & cylinder truck)
Welder, TIG	3	3	3	250 amp, w/attachments
Welding booths	10	12	12	For arc welding, 60" W x 96"H w/16" deep work surface

Career & Technical Education

Item Name	Count 15 Students	Count 20 Students	Count 25 Students	Description/Specification
Welding stations, oxyacetylene	6	6	6	Including 2-stage regulators

APPLIED SCIENCES

PHYSICS IN CONTEXT

MINIMUM INSTRUCTIONAL EQUIPMENT AND SOFTWARE

Item Name	Count Per 4 Students	ECI Part #	Count Per Laboratory	Description/Specification /Cost Per Unit
Television/VCR/DVD			1	$500
Computer printer, laser			1	
Computer system, teacher's			1	See Technology Standards
Breadboarding equipment	1	12500-1		$375
Electrical mounted components	1	12500-2		$226
Hardware & measuring package	1	12500-3		$313
Mechanical mounted components	1	12500-4		$420
Fluid accessories	1	12500-5		$395
Thermal accessories	1	12500-6		$280
Container & accessory package	1	12500-7		$204
Special assemblies	1	12500-8		$200
Waves & momentum	1	12500-9		$459
Radiation & optics	1	12500-10		$980
Laboratory items	1	12500-11		$1,985
High current power supply	1	20600 E		$595
Digital multimeter	1	50200 A		$595
MOSFET multimeter	1	50500 B		$595
Function generator	1	40600		$595
Occilloscope, dual trace, 20 MHz	1	30920 E		$595
Physics in Context laboratory manual		12501 A	1	$35
Physics in Context laboratory student journal	4	12501 AJ		$20
Instructor's guide		12503 A	1	$35

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